www.helicobacterkorea.org

SI-HUG 2020

The 28th Annual Meeting of the Korean College of *Helicobacter* and Upper Gastrointestinal Research & the 3rd Seoul International Symposium on *Helicobacter* and Upper Gastrointestinal Diseases

July 17-18, 2020

CONRAD SEOUL, Korea

Korean College of *Helicobacter* and Upper Gastrointestinal Research

The 28th Annual Meeting of the Korean College of *Helicobacter* and Upper Gastrointestinal Research & the 3rd Seoul International Symposium on *Helicobacter* and Upper Gastrointestinal Diseases

CONTENTS

WELCOME MESSAGE

Dear Colleagues and Friends,

On behalf of the organizing committee, it is a great pleasure to welcome you to the 28th Annual Meeting of the Korean College of *Helicobacter* and Upper Gastrointestinal Research and the 3rd Seoul International Symposium on *Helicobacter* and Upper Gastrointestinal Diseases (SI-HUG 2020) to be held from July 17th to 18th, 2020, at the Conrad Seoul Hotel, Korea.

Topics like the updates on the treatment of *H. pylori* infection, Asian forum on the *H. pylori* infection and malignant diseases, as well as clinical themes like strategies for the resistant *H. pylori* and chemopreventive strategies in upper gastrointestinal cancer, will be highlighted in this symposium. SI-HUG 2020 will provide us an excellent opportunity to consider changes we can implement, to share successful experiences and to discuss the latest knowledge in the clinical areas related to *H. pylori* and upper gastrointestinal diseases with the world-famous experts.

In particular, SI-HUG 2020 will be held as the hybrid symposium because of COVID-19. Domestic registrants will attend the SI-HUG 2020 site. And to address the concerns of overseas participants who are unable to confirm their participation and to ensure the stability of schedule, the Organizing Committee has prepared a virtual symposium so that all overseas participants can give presentations and attend virtual. SI-HUG 2020 committee will be doing it's best to organize a safe and successful symposium.

We are expecting all of the participants enjoy this unique opportunity to exchange their research and knowledge in SI-HUG 2020.

Sincerely yours,

Jae Gyu Kim

President of Korean College of *Helicobacter* and Upper Gastrointestinal Research

ORGANIZING COMMITTEE

President
Jae Gyu Kim (Chung-Ang University College of Medicine)

Vice President
Jong Jae Park (Korea University College of Medicine)

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Il Ju Choi (National Cancer Center)

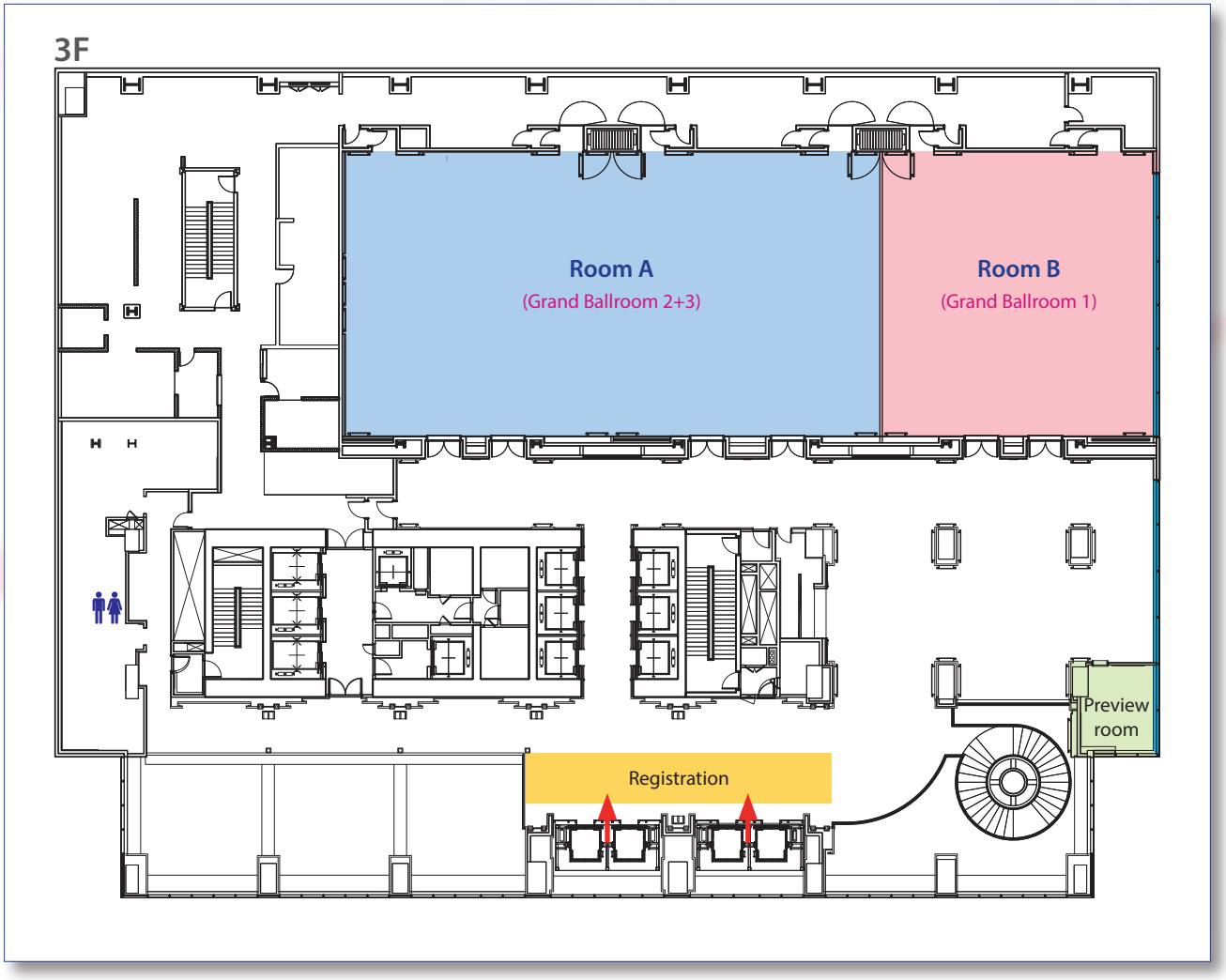
Vice Secretary General
Woon Geon Shin (Hallym University College of Medicine)
Beom Jin Kim (Chung-Ang University College of Medicine)

PROGRAM AT A GLANCE

July 17 (Fri.)		
Time	Room A	Room B
08:00-	Registration	
09:00-	Opening Remark	E-Poster Display & Exhibition
09:00-10:20	Scientific Session 1 Updates on the treatment of *H. pylori* infection	
10:20-10:40	Break	
10:40-11:40	Symposium (OIAA) Management of GI disorders in Asia	
11:40-12:20	Special Lecture Publishing in gastroenterology: An editor's perspective	
12:20-13:20	General Assembly Luncheon Symposium 1	
13:20-15:00	Scientific Session 2 Asian forum: *H. pylori* infection and malignant diseases	
15:00-15:20	Break	
15:20-16:20	Plenary Session	
16:20-17:20	Scientific Session 3 Identification and mangement of high-risk populations in gastric cancer	

July 18 (Sat.)		
Time	Room A	Room B
08:00-	Registration	
09:00-09:40	Free Paper 1	E-Poster Display & Exhibition
09:40-10:20	Free Paper 2	
10:20-11:00	Free Paper 3	
11:00-11:30	Break	
11:30-12:50	Scientific Session 4 Are we doing our best in the era of the resistant *H. pylori* prevailing?	
12:50-13:50	Luncheon Symposium 2	
13:50-15:10	Scientific Session 5 Chemopreventive strategies in upper GI cancer	
15:10-15:30	Break	
15:30-16:50	Scientific Session 6 KCHUGR-VFDE Joint Symposium	
16:50-	Closing Remark	

FLOOR PLAN



Room A (Grand Ballroom 2+3)
- Scientific Session 1-6
- Symposium, Special Lecture
- Plenary Session, Free Paper Session 1-3
- Luncheon Symposium 1, 2

Room B (Grand Ballroom 1)
- Exhibition
- E-poster Display

Lobby
- Exhibition
- Coffee Breaks
- Registration

SYMPOSIUM INFORMATION

Title	The 28th Annual Meeting of the Korean College of *Helicobacter* and Upper Gastrointestinal Research and the 3rd Seoul International Symposium on *Helicobacter* and Upper Gastrointestinal Diseases (SI-HUG 2020)
Dates	July 17 (Fri) - 18 (Sat), 2020
Venue	Conrad Seoul, Korea
Website	www.helicobacterkorea.org
Official Language	English
Organized by	Korean College of *Helicobacter* and Upper Gastrointestinal Research
Secretariat Office	**After the symposium** Convention PM Tel: +82 2 2269 4381 (Registration: +82-2-2269-4383) Email: helicobacter@conventionpm.com **During the symposium** Registration Desk

[Registration]

Registration Desk

Date	Time	Location
July 17 (Fri) - July 18 (Sat)	08:00-17:00	Lobby (3F)

** Name Badge: For security purposes, participants and exhibitors are required to wear their name badges during the conference.

** Certificate of Attendance: Please send the email to the secretariat after the symposium. Those who need a hard copy may receive it at the registration desk after 16:00 of July 17 (Fri) and July 18 (Sat).

[Coffee Break]

Date	Time	Location
July 17 (Fri) July 18 (Sat)	10:20-10:40, 15:00-15:20 11:00-11:50, 15:30-15:50	Lobby (3F)

SYMPOSIUM INFORMATION

[Luncheon Symposium]

Location	Date & Time	
Room A (3F)	inno.N	JEIL PHARMACEUTICAL CO.,LTD.
	July 17 (Fri), 12:20-13:20	July 18 (Sat), 13:10-14:10

[Preview Room]

Preview room is available for all speakers to review and submit their final presentation slides before presentation. The speakers are required to check-in at the preview room to review their slides and save the final versions. Final presentation file(s) must be uploaded at least 1 hour before the start of their sessions.

Date	Time	Location
July 17 (Fri) - July 18 (Sat)	08:00-17:00	Dressing Room (3F)

[E-poster Display]

E-poster will be displayed on the dates and times below. Also E-poster display can be viewed on the symposium website during the symposium, www.helicobacterkorea.org.

Date	Time	Location
July 17 (Fri) - July 18 (Sat)	08:00-17:00	Room B

"SI-HUG 2020 was supported by the Korea Research Foundation for Internal Medicine."

INVITED FACULTIES

FROM OVERSEASE

Hong Kong
Wai K. Leung
(University of Hong Kong)

Indonesia
Marcellus Simadibrata
(University of Indonesia)

Japan
Takahisa Furuta
(Hamamatsu University School of Medicine)
Mototsugu Kato
(National Hospital Organization Hakodate National Hospital)
Hidekazu Suzuki
(Tokai University)
Toshikazu Ushijima
(National Cancer Center)

Malaysia
Alex Hwong Ruey Leow
(Pantai Hospital Kulala Lumpur)

Mongolia
Sarantuya Gidaagaya
(Intermed Hospital)

Myanmar
Than Than Aye
(University of Medicine 2 Yangon)

Philippines
Miguel Edgardo M. Fores
(Makati Medical Center)
Ruter Maralit
(University of the Philippines)

Singapore
Tiing Leong Ang
(Changi General Hospital)

Taiwan
Jyh-Ming Liou
(National Taiwan University Hospital)

Thailand
Varocha Mahachai
(Chulalongkorn University)
Ratha-korn Vilaichone
(Thammasat University)

USA
Steven F. Moss
(Brown University)

Vietnam
Vu Van Khien
(108 Central Hospital)
Vo Phuoc Tuan
(Cho Ray Hospital)

INVITED FACULTIES

FROM KOREA

Jae-Ho Cheong (Yonsei University)

Dae Young Cheung (The Catholic University of Korea)

Il Ju Choi (National Cancer Center)

Kee Don Choi (University of Ulsan)

Hoon Jai Chun (Korea University)

Ki-Baik Hahm (CHA University)

Su Jin Hong (Soon Chun Hyang University)

Sam Ryong Jee (Inje University)

Seong Woo Jeon (Kyungpook National University)

Hwoon-Yong Jung (University of Ulsan)

Sung Woo Jung (Korea University)

Beom Jin Kim (Chung-Ang University)

Byung-Wook Kim (The Catholic University of Korea)

Chan Gyoo Kim (National Cancer Center)

Gwang Ha Kim (Pusan National University)

Hark Kyun Kim (National Cancer Center)

Jae Gyu Kim (Chung-Ang University)

Jung Mogg Kim (Hanyang University)

Nayoung Kim (Seoul National University)

Sun Moon Kim (Konyang University)

Dong Ho Lee (Seoul National University)

Jun Haeng Lee (Sungkyunkwan Univesity)

Ok-Jae Lee (Gyeongsang National University)

Sang Woo Lee (Korea University)

Sun-Young Lee (Konkuk University)

Yong Chan Lee (Yonsei University)

Jeong Seop Moon (Inje University)

Jae Myung Park (The Catholic University of Korea)

Jong-Jae Park (Korea University)

Soo-Heon Park (The Catholic University of Korea)

Sang-Yong Seol (Inje University)

Cheol Min Shin (Seoul National University)

Sung Kwan Shin (Yonsei University)

Hyo-Joon Yang (Sungkyunkwan Univesity)

SCIENTIFIC PROGRAMS

July 17 (Fri), 2020

08:00-	Registration
09:00-	Opening remark Jae Gyu Kim (President of the KCHUGR)
09:00-10:20	**Scientific Session 1: Updates on the treatment of *H. pylori* infection**
	Chairs: Soo-Heon Park (The Catholic University of Korea, Korea), Beom Jin Kim (Chung-Ang University, Korea)
09:00-09:20	Prolonging treatment duration vs. adding bismuth: Role of bismuth in eradication Sun-Young Lee (Konkuk University, Korea)
09:20-09:40	High dose PPI vs. P-CAB: Role of acid inhibition in eradication of *H. pylori* Takahisa Furuta (Hamamatsu University, Japan)
09:40-10:00	Culture-based vs. empirical salvage therapy for *H. pylori* eradication Jyh-Ming Liou (National Taiwan University, Taiwan)
10:00-10:20	Antibiotics vs. probiotics for eradication: Impact of eradication on gut microbiota Nayoung Kim (Seoul National University, Korea)
10:20-10:40	Break
10:40-11:40	**Symposium (OIAA): Management of GI disorders in Asia**
	Chairs: Jun Haeng Lee (Sungkyunkwan University, Korea), Sung Woo Jung (Korea University, Korea)
10:40-10:55	New insights on management of dyspepsia, gastric ulcer and gastritis Ratha-korn Vilaichone (Thammasat University, Thailand)
10:55-11:10	Rebamipide and small bowel bleeding Than Than Aye (University of Medicine 2 Yangon, Myanmar)
11:10-11:25	Treatment of *H. pylori* resistant patient Miguel Edgardo M. Fores (Makati Medical Center, Philippines)
11:25-11:40	Follow-up testing after treatment of *H. pylori* infection Chan Gyoo Kim (National Cancer Center, Korea)
11:40-12:20	**Special Lecture**
	Chair: Sang Woo Lee (Korea University, Korea)
11:40-12:20	Publishing in gastroenterology: An editor's perspective Yong Chan Lee (Yonsei University, Korea)
12:20-13:20	**General Assembly** **Luncheon Symposium 1**
	Chairs: Jong-Jae Park (Korea University, Korea), Dae Young Cheung (The Catholic University of Korea, Korea)
12:20-13:20	Therapeutic advance in acid-related disease: The present and the future Kee Don Choi (University of Ulsan, Korea)

SCIENTIFIC PROGRAMS

July 17 (Fri), 2020

13:20-15:00	**Scientific Session 2: Asian forum: *H. pylori* infection and malignant diseases**
	Chairs: Jae Gyu Kim (Chung-Ang University, Korea), Gwang Ha Kim (Pusan National University, Korea)
13:20-13:30	Gastric cancer and *H. pylori* in Thailand Varocha Mahachai (Chulalongkorn University, Thailand)
13:30-13:40	*H. pylori* infection and gastric cancer in Myanmar Than Than Aye (University of Medicine 2 Yangon, Myanmar)
13:40-13:50	*H. pylori* infection and malignant diseases in Philippines Ruter Maralit (University of the Philippines, Philippines)
13:50-14:00	Status of *H. pylori* infection and related diseases in Vietnam Vu Van Khien (108 Central Hospital, Vietnam)
14:00-14:10	*H. pylori* infection in Malaysia Alex Hwong Ruey Leow (Pantai Hospital Kulala Lumpur, Malaysia)
14:10-14:20	*H. pylori* infection and malignant diseases in Mongolia Sarantuya Gidaagaya (Intermed Hospital, Mongolia)
14:20-14:30	*H. pylori* infection and gastric cancer in Singapore Tiing Leong Ang (Changi General Hospital, Singapore)
14:30-14:40	*H. pylori* infection and malignant diseases in Indonesia Marcellus Simadibrata (Universitas Indonesia, Indonesia)
14:40-15:00	Discussion
15:00-15:20	Break
15:20-16:20	**Plenary Session**
	Chairs: Sang-Yong Seol (Inje University, Korea), Sam-Ryoung Jee (Inje University, Korea)
15:20-15:35	Effect of *Helicobacter pylori* reinfection on metachronous cancer risk after endoscopic submucosal dissection for early gastric cancer Jae Ok Park (National Cancer Center, Korea)
15:35-15:50	Isolation of *Helicobacter pylori* using leftover tissue from rapid urease test kit Eun Jeong Gong (University of Ulsan, Korea)
15:50-16:05	HERES (highly expressed lncRNA in esophageal squamous cell carcinoma) epigenetically regulates WNT-signal pathway in esophageal squamous cell carcinoma Sang Kil Lee (Yonsei University, Korea)
16:05-16:20	Results from the pilot study of the multicentre randomised trial of *H. pylori* eradication and pepsinogen testing for prevention of gastric cancer mortality (the GISTAR Pilot study) Jin Young Park (International Agency for Research on Cancer, France)

SCIENTIFIC PROGRAMS

July 17 (Fri), 2020

16:20-17:20	**Scientific Session 3: Identification and mangement of high-risk populations in gastric cancer**
	Chairs: Ki-Baik Hahm (CHA University, Korea), Seong Woo Jeon (Kyungpook National University, Korea)
16:20-16:40	Transcriptome based molecular subtyping for precision medicine in gastric cancer Jae-Ho Cheong (Yonsei University, Korea)
16:40-17:00	Epigenomic risk stratification of healthy people after *H. pylori* eradication Toshikazu Ushijima (National Cancer Center, Japan)
17:00-17:20	Genetic predisposition and alterations Hark Kyun Kim (National Cancer Center, Korea)

SCIENTIFIC PROGRAMS

July 18 (Sat), 2020

08:00-	Registration
09:00-09:40	**Free Paper Session 1**
	Chairs: Dong Ho Lee (Seoul National University, Korea), Jung Mogg Kim (Hanyang University, Korea)
09:00-09:10	Efficacies of a tailored eradication strategy versus empirical bismuth-containing quadruple therapy as first-line eradication for *Helicobacter pylori* infection in Korean patients: A prospective, comparative, open trial Youn I Choi (Gachon University, Korea)
09:10-09:20	Current trend in the *Helicobacter pylori* eradication rates of first-line sequential and concomitant therapies in Korea: A nationwide multicenter retrospective study over the 9 years Byung-Wook Kim (The Catholic University of Korea, Korea)
09:20-09:30	Follow up reinfection situation of *Helicobacter pylori* after successful eradication: A single-center study in Vietnam Nguyen Thi Hao (Hanoi Medical University, Vietnam)
09:30-09:40	Changes in the fluoroquinolone resistance of *Helicobacter pylori* over a 14-year period and discovery of a novel mutation in DNA gyrase: A single-center study in Korea Jae Yong Park (Chung-Ang University, Korea)
09:40-10:20	**Free Paper Session 2**
	Chairs: Hoon Jai Chun (Korea University, Korea), Jeong Seop Moon (Inje University, Korea)
09:40-09:50	Clinical significance of TWIST-expressing circulating tumor cells in patients with esophageal squamous cell carcinoma Moon Won Lee (Pusan National University, Korea)
09:50-10:00	Tumour infiltrating lymphocytes assessed on haematoxylin eosin stained pre-treatment biopsies of oesophageal cancer patients predict benefit from chemotherapy - Results from the UK MRC OE02 trial Maximilian Häller (Maastricht University Medical Center+, Netherlands)
10:00-10:10	The effect of *Helicobacter pylori* infection and eradication on the tight junction in the gastric mucosal barrier Sooin Choi (Seoul National University, Korea)
10:10-10:20	Alcian blue – a rediscovered biomarker of poor prognosis in gastric cancer patients Drolaiz Liu (Maastricht University Medical Center+, Netherlands)
10:20-11:00	**Free Paper Session 3**
	Chairs: Ok-Jae Lee (Gyeongsang National University, Korea), Hwoon-Yong Jung (University of Ulsan, Korea)
10:20-10:30	Risk factors for lymph node metastasis and mortality after non-curative resection of undifferentiated early gastric cancer Hyo-Joon Yang (Sungkyunkwan University, Korea)

SCIENTIFIC PROGRAMS

July 18 (Sat), 2020

10:30-10:40	Development of prediction model for gastric cancer using artificial intelligence based on the big data cohort and single nucleotide poylmorphism in Korea cohort Chung Hyun Tae (Ewha Womans University, Korea)
10:40-10:50	Infectious events after endoscopic procedures in hematologic patients with neutropenia Ga-Yeong Shin (The Catholic University of Korea, Korea)
10:50-11:00	Clinical outcomes of enteral feeding protocol via percutaneous endoscopic gastrostomy: A single center, retrospective study Jin Hee Noh (University of Ulsan, Korea)
11:00-11:30	Break
11:30-12:50	**Scientific Session 4: Are we doing our best in the era of the resistant *H. pylori* prevailing?**
	Chairs: Yong Chan Lee (Yousei University, Korea), Jae Myung Park (The Catholic University of Korea, Korea)
11:30-11:50	Reconciliation of *H. pylori* guidelines in Western countries: First and second line regimens Steven F. Moss (Brown University, USA)
11:50-12:10	Reconciliation of *H. pylori* guidelines in Eastern countries: First and second line regimens Mototsugu Kato (National Hospital Organization Hakodate National Hospital, Japan)
12:10-12:30	Profiling the resistance: Genotyping based Byung-Wook Kim (The Catholic University of Korea, Korea)
12:30-12:50	Discussion
12:50-13:50	**Luncheon Symposium 2**
	Chairs: Jae Gyu Kim (Chung-Ang University, Korea), Sun Moon Kim (Konyang University, Korea)
12:50-13:50	Patients centered approach to management of upper GI diseases focused on PPI Jun Haeng Lee (Sungkyunkwan University, Korea)
13:50-15:10	**Scientific Session 5: Chemopreventive strategies in upper GI cancer**
	Chairs: Jong-Jae Park (Korea University, Korea), Su Jin Hong (Soon Chun Hyang University, Korea)
13:50-14:10	Effect on *H. pylori* eradication therapy against gastric cancer Hidekazu Suzuki (Tokai University, Japan)
14:10-14:30	Metformin use and gastric cancer risk Wai K. Leung (University of Hong Kong, Hong Kong)
14:30-14:50	Chemopreventive effect of aspirin against gastric cancer Il Ju Choi (National Cancer Center, Korea)
14:50-15:10	Discussion
15:10-15:30	Break

SCIENTIFIC PROGRAMS

July 18 (Sat), 2020

15:30 - 16:50	**Scientific Session 6: KCHUGR-VFDE Joint Symposium**
	Chairs: Jae Gyu Kim (Chung-Ang University, Korea), Sung Kwan Shin (Yonsei University, Korea)
15:30-15:45	Diagnosis and treatment of *H. pylori* infection in Vietnamese children: What are the differences between adults and children? Vu Van Khien (108 Central Hospital, Vietnam)
15:45-16:00	A potential biomarker panel to distinguish gastric cancer from duodenal ulcer: Results from GWAS in East Asian-type *H. pylori* Vo Phuoc Tuan (Cho Ray Hospital, Vietnam)
16:00-16:15	Guidelines for the treatment of *H. pylori* infection in Korea, 2020 revised edition - Newly added indications for *H. pylori* eradication Cheol Min Shin (Seoul National University, Korea)
16:15-16:30	Guidelines for the treatment of *H. pylori* infection in Korea, 2020 revised edition - Recent evidence for *H. pylori* eradication Hyo-Joon Yang (Sungkyunkwan University, Korea)
16:30-16:50	Discussion
16:50	**Closing Remark**

E-POSTER PRESENTATION

P Poster of distinction

P PD-001 Propolis ethanol extract activity as anti-*Helicobacter pylori* on clarithromycin and metronidazole resistant strains
Yudith Annisa Ayu Rezkitha (Universitas Airlangga, Indonesia)

P PD-002 Comparison of furazolidone versus clarithromycin for eradication of *Helicobacter pylori* infection: A randomized multicenter clinical trial
Pezhman Alavinejad (Ahvaz Jundishapur University of Medical Sciences, Iran)

P PD-003 *Helicobacter pylori* eradication affects platelet count recovery in immune thrombocytopenia
Ayoung Lee (Seoul National University, Korea)

P PD-004 Effect of *Helicobacter pylori* eradication after subtotal gastrectomy on the survival rate of patients with gastric cancer: Follow-up for up to 15 years
Nayoung Kim (Seoul National University, Korea)

P PD-005 Ten-day bismuth quadruple therapy versus 7-day proton pump inhibitor-clarithromycin containing triple therapy as first-line treatment of *Helicobacter pylori* eradication: An open-label, randomized trial
Young-Il Kim (National Cancer Center, Korea)

P PD-006 Endoscopic submucosal dissection versus esophagectomy for mucosal esophageal squamous cell carcinoma: Treatment outcomes and factors affecting survival
Ga Hee Kim (University of Ulsan, Korea)

P PD-007 The influence of direct oral anticoagulants on delayed bleeding in patients with early gastric neoplasms who underwent endoscopic submucosal dissection
Jinju Choi (Seoul National University, Korea)

P PD-008 Discordant prognostic significance of negative lymph node size in patients with oesophageal cancer treated with either surgery or neoadjuvant chemotherapy and surgery – results from the MRC OE02 trial
Maximilian Kloft (Maastricht University Medical Center+, Netherlands)

PD-009 Effect of dietary pattern on gastric cancer: Multi-center prospective registry
Su Youn Nam (Kyungpook National University, Korea)

PD-010 Association of regular arrangement of collecting venules pattern of gastric mucosa, histopathology and rapid urease test in diagnosing *Helicobacter pylori* gastritis: A single tertiary hospital
Abigail Valenzuela (De La Salle University Medical Center, Philippines)

PD-011 Prevalence of *H. pylori* in chronic dyspepsia at Central Hospital: A single-center experience in Cambodia
Chea Ong (Khmer Soviet Friendship Hospital, Cambodia)

PD-012 Application of whole process management based on smartphone application software in eradication of *Helicobacter pylori*
Guanghong Du (Sichuan Academy of Medical Sciences & Sichuan People's Hospital, China)

PD-013 Therapeutic potential of capsanthin against gastric ulcer: Bioactivity and phytopharmaceutical importance against digestive disorders
Dinesh Kumar Patel (Sam Higginbottom University of Agriculture, India)

PD-014 The incidence of *Helicobacter pylori* infection based on the results of CLO rapid tests and histopathology in dyspepsia patients at the center of gastroentero-hepatology, wahidin sudirohusodo hospital, Makassar, South Sulawesi, Indonesia
Amelia Rifai Amiruddin (Hasanuddin University, Indonesia)

E-POSTER PRESENTATION

PD-015 Description of *Helicobacter pylori* examination based on rapid urease test in non-variceal upper gastrointestinal bleeding that run elective endoscopy at Wahidin Sudirohusodo Hospital, Makassar, Indonesia
Muhammad Luthfi Parewangi (Hasanuddin University, Indonesia)

PD-016 Prevalence of *Helicobacter pylori* among 1-69 years old Ardabil population in 2018: A high incidence area for gastric cancer
Farhad Pourfarzi (Ardabil University of Medical Sciences, Iran)

PD-017 The effect of furazolidone-based and clarithromycin-based regimens in the treatment of *Helicobacter pylori* in a high gastric cancer incidence area
Farhad Pourfarzi (Ardabil University of Medical Sciences, Iran)

PD-018 Modified quadruple- vs. bismuth-containing quadruple therapy as first-line treatment for *Helicobacter pylori* infection
Chang Seok Bang (Hallym University, Korea)

PD-019 Low grade gastric mucosa-associated lymphoid tissue lymphoma: Clinicopathological factors associated with *Helicobacter pylori* eradication and tumor regression
Dong Ho Lee (Seoul National University, Korea)

PD-020 Clarithromycin resistance test before first-line treatment could improve the eradication rate of *Helicobacter pylori*
Jin Tae Jung (Daegu Catholic University, Korea)

PD-021 Less than 10% of *Helicobacter pylori*-seronegative subjects show true infection after seroconversion
Sun-Young Lee (Konkuk University, Korea)

PD-022 Comparative study of *Helicobacter pylori* eradication rates of bismuth-containing quadruple therapy versus modified quadruple therapy in Korea
Hae Min Jeong (Hallym University, Korea)

PD-023 The current antibiotic resistance and the role of MIC levels of resistance to antibiotics in *Helicobacter pylori* eradication in Korea
Yonghwan Kwon (Kyungpook National University, Korea)

PD-024 Eradication rates for *Helicobacter pylori* with standard triple and quadruple therapy based on 23S ribosomal RNA point mutation
Sang Yoon Kim (The Catholic University of Korea, Korea)

PD-025 Comparative study of *Helicobacter pylori* eradication rates with hybrid therapy and concomitant therapy
Jeong Hun Park (Korea University, Korea)

PD-026 Risk factors for loss to follow-up examination in *H. pylori* eradication therapy since insurance criteria expansion from 2018 in Korea: A single center study of 765 cases
Jaejoon Lee (Jeju National University, Korea)

PD-027 The prevalence of antimicrobial resistance of *Helicobacter pylori* in Korea from 2017 to 2019: A single center study
Jae Yong Park (Chung-Ang University, Korea)

PD-028 Efficacy and cost-effectiveness of *Helicobacter pylori* eradication: Comparison of tailored therapy based on clarithromycin resistance and concomitant therapy
Seong Min Kim (Korea University, Korea)

E-POSTER PRESENTATION

PD-029 Clinical application of loop-mediated isothermal amplification method on *Helicobacter pylori* diagnosis and detection of clarithromycin resistance: Preliminary study in comparison with rapid urease test
Seong Woo Jeon (Kyungpook National University, Korea)

PD-030 Can DPO-PCR based tailored-therapy increase the eradication rate of *Helicobacter pylori*?
Youngwoo Kim (Catholic Medical Center, Korea)

PD-031 The effect of eupatilin therapy on eradication rates and side effects during *Helicobacter pylori* eradication
Dong Hoon Lee (Inje University, Korea)

PD-032 Empiric versus clarithromycin-resistance-guided therapy for *Helicobacter pylori* based on polymerase chain reaction results in patients with gastric neoplasms or gastric MALT lymphoma: A randomized controlled trial
Jue Lie Kim (Seoul National University, Korea)

PD-033 Predictors to develop side effects during bismuth-based quadruple therapy as first-line eradication for *Helicobacter pylori* infection patients
Youn I Choi (Gachon University, Korea)

PD-034 Quantification of *H. pylori* density and detection of mutations associated with clarithromycin and levofloxacin resistance in gastric biopsies using TaqMan quantitative PCR assay
Alfizah Hanafiah (Universiti Kebangsaan Malaysia, Malaysia)

PD-035 *Helicobacter pylori* and T helper type 1 (Th1) cells: In-vitro study and gene expression analyses
Noor Masyitah Jumahat (Universiti Teknologi, Malaysia)

PD-036 Effect of *Helicobacter pylori* eradication therapy on the *lactobacillus*
Amarjargal Batdelger (The Third State Central Hospital, Mongolia)

PD-037 Rate of *Helicobacter pylori* eradication by levofloxacin-based and clarithromycin-based sequential therapy regimens at tertiary care hospital
Ghulam Mujtaba Dahri (Liaquat National Hospital, Pakistan)

PD-038 Comparing yield of fecal antigen testing with endoscopic gastric mucosal biopsy for detection of *H. pylori* in dyspeptic patients
Lubna Meraj (Rawalpindi Medical University, Pakistan)

PD-039 Efficacy assessment of urea breath test in dyspeptic *Helicobacter pylori* sero-positive patients
Muhammad Kamran Hassan (Lady Reading Hospital, Pakistan)

PD-040 Comparison of 7-day versus 14-day vonoprazan triple regimen in *H. pylori* infection: A retrospective analysis
John Peter Lim (Cardinal Santos Medical Center, Philippines)

PD-041 Role of probiotics as an add on therapy in eradicating *H. pylori* infection
Shafqat Iqbal (Holy Family Hospital, Pakistan)

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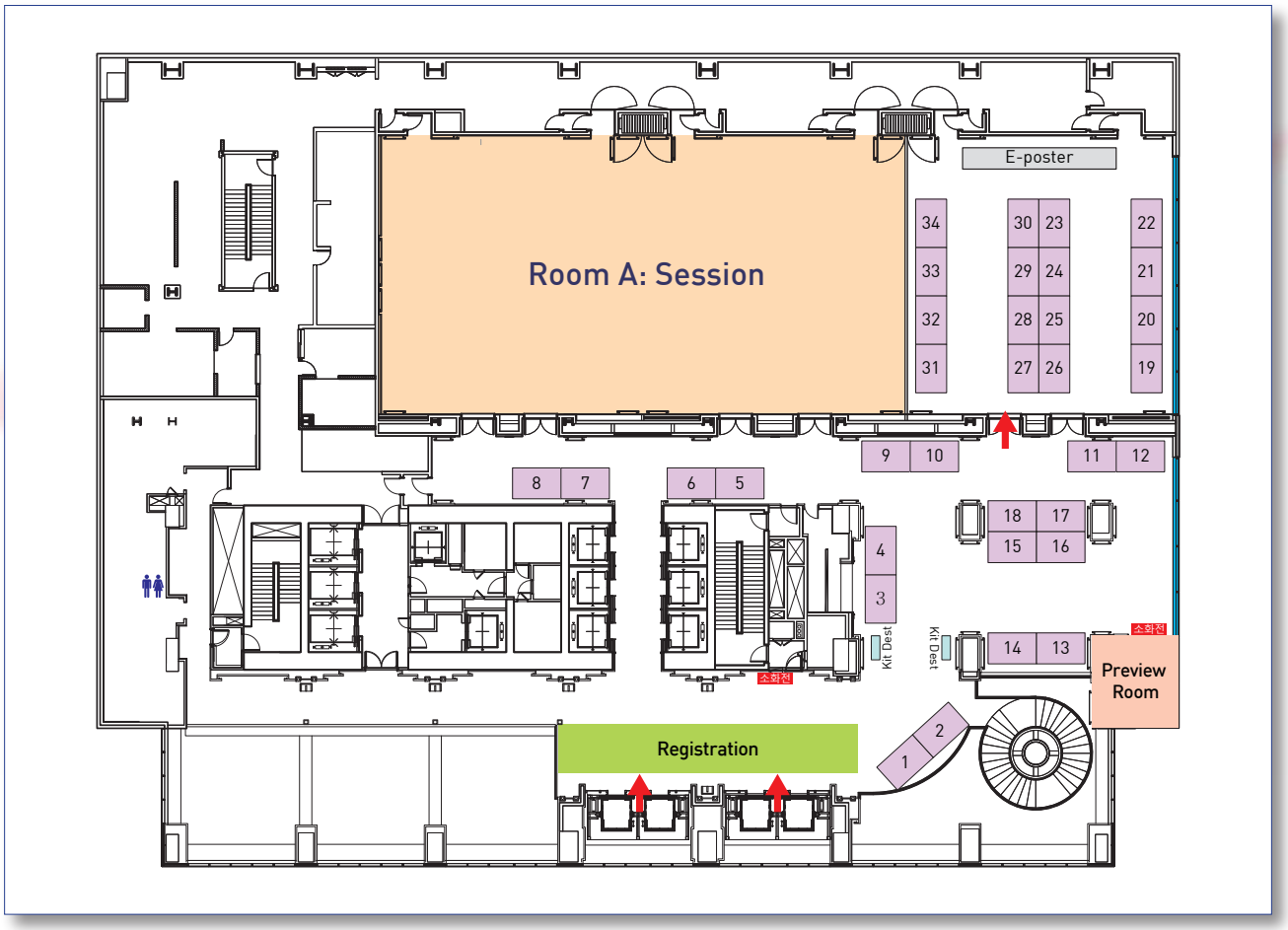
EXHIBITION

All participants will have opportunity throughout the congress to visit the industrial exhibition.
The exhibition will be located at the Room B and 3F Lobby.

Exhibition Date & Time	July 17 (Fri.) – 18 (Sat), 2020 08:30-17:00



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SI-HUG 2020

The 28th Annual Meeting of the Korean College of *Helicobacter* and Upper Gastrointestinal Research & the 3rd Seoul International Symposium on *Helicobacter* and Upper Gastrointestinal Diseases

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July 17 (Fri), 2020

9:00 - 10:20

Scientific session 1: Updates on the treatment of *H. pylori* infection

Chairs:

Soo-Heon Park (The Catholic University of Korea, Korea)

Beom Jin Kim (Chung-Ang University, Korea)

Prolonging treatment duration *vs.* adding bismuth: Role of bismuth in eradication

Sun-Young Lee

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CURRICULUM VITAE

Educational Background

- Bachelor's degree: 1992-1998 School of Medicine, Korea University, Seoul, Korea
- Master's degree: 1999-2002 Graduate School of Medicine, Korea University, Seoul, Korea
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Professional Career

- 1998-2005: Internship, Residency, and Fellowship, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea
- 2005-2009: Assistant Professor, Department of Internal Medicine, Konkuk University School of Medicine
- 2010-2014: Associate Professor, Department of Internal Medicine, Konkuk University School of Medicine
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Research Field

- Gastrointestinal endoscopy
- Gastrointestinal inflammation and neoplasm
- *Helicobacter pylori*

ABSTRACT

The effectiveness of *H. pylori* eradication therapy differs according to duration, dose, and antibiotic resistance. Given the low resistance rates to amoxicillin and tetracycline in Korea,[1,2] clarithromycin, amoxicillin, and proton pump inhibitor (PPI) or potassium-competitive acid blocker (K^+-CAB) are administered as first-line therapy, while bismuth-based quadruple therapy is administered as second-line therapy (Table 1). Evidence supports that with good patient compliance, *H. pylori* infection can be eradicated in 99.8% of patients.[3]

Prolonged treatment duration for *H. pylori* infection may increase the eradication rate; however, it may also increase antibiotic resistance and subsequent adverse drug effects.[4,5] Two-week therapy decreases patient compliance;[6,7] hence, the utilization of one-week therapy should remain clinically relevant.[8] Moreover, longer use of multiple antibiotics, including sequential therapy and concomitant therapy, do not guarantee higher eradication rates than other regimens.[9] Rather than prolonging treatment duration or increasing the number of antibiotics, adding bismuth or increasing the dose of acid suppressant should be considered.

Bismuth exerts a bactericidal effect and interferes with the adherence of *H. pylori* by forming complexes between the bacterial wall and periplasmic space.[10] It acts as a barrier to aggressive factors by suppressing leukotriene biosynthesis and inactivating pepsin. Bismuth also increases bicarbonate secretion and the biosynthesis of prostaglandin and epidermal growth factors. Bismuth-based therapy can overcome *H. pylori* resistance to metronidazole and clarithromycin, unless the minimum inhibitory concentration of metronidazole exceeds 32 μg/mL.[11] Concerns on conventional bismuth-based quadruple therapy are poor patient adherence owing to its frequent intake. Only 300 mg is available in Korea; hence, 1200 mg/day of bismuth is administered which is a larger dose than the total dose of bismuth (480 mg/day) administered in other countries for the four times daily, conventional bismuth-containing quadruple therapy.

Recently, we found that twice daily intake of bismuth-containing quadruple therapy (2 g of tetracycline, 1.5 g of metronidazole, and 600 mg of bismuth subcitrate with PPI) for one week is as effective as the four times daily, conventional therapy.[12] Moreover, twice daily intake decreased the incidence of abdominal pain, discomfort,

Table 1. *H. pylori* eradication therapy recommended by the Korean government

	Regimens available for 7-14 days	Remarks
1st-line	Clarithromycin 500 mg b.i.d. Amoxicillin 1 g b.i.d. PPI 1 tablet or K^+-CAB 50 mg b.i.d.	In the presence of penicillin allergy or clarithromycin resistance, the second-line regimen is recommended. Adding bismuth may overcome clarithromycin resistance.[14]
2nd-line	Metronidazole 500 mg t.i.d. Tetracycline 500 mg q.i.d. Bismuth subcitrate 300 mg q.i.d. PPI 1 tablet b.i.d.	Twice daily intake of metronidazole 750 mg, tetracycline 1 g, bismuth subcitrate 300 mg, and PPI 1 tablet is effective as four times daily intake.
3rd-line	Levofloxacin 500 mg b.i.d. Amoxicillin 1 g b.i.d. PPI 1 tablet b.i.d.	Owing to the increase of the quinolone resistance rate, repeating the second-line therapy is effective.[15]

PPI, proton pump inhibitor; K^+-CAB, potassium-competitive acid blocker.

and distention following medication. In our study, all patients were instructed to complete one week of drug intake unless a side effect leads to an emergency visit. Moreover, we provided Korean language instructions disseminating the flowchart of *H. pylori* eradication and possible adverse drug effects to increase patient's knowledge and adherence to medication for active prevention of *H. pylori* antibiotic resistance. As a result, adverse drug effects were common, but most were not severe enough to halt the treatment. Overall, it is important to provide information on side effects, goals of therapy, and importance of therapy to complete confirmation test after medication.

In summary, administration of bismuth twice daily with high-dose PPI or K^+-CAB may be additive in increasing the *H. pylori* eradication rate. Like bismuth-based quadruple therapy, twice daily intake of first-line therapy with bismuth would be helpful, because bismuth can enhance the effectiveness of triple therapy.[13] Shorter duration and fewer antibiotics are desirable to increase patient adherence and to minimize the risk of antibiotic resistance.

References

1. Lee JH, Ahn JY, Choi KD, et al. Nationwide antibiotic resistance mapping of *Helicobacter pylori* in Korea: A prospective multicenter study. *Helicobacter* 2019;24:e12592.
2. Lee JY, Kim N, Nam RH, et al. Primary and secondary antibiotic resistance of *Helicobacter pylori* in Korea from 2003 to 2018. *Helicobacter* 2019;24:e12660.
3. Yoon K, Kim N, Nam RH, et al. Ultimate eradication rate of *Helicobacter pylori* after first, second, or third-line therapy in Korea. *J Gastroenterol Hepatol* 2015;30:490-5.
4. Lim SG, Park RW, Shin SJ, et al. The relationship between the failure to eradicate *Helicobacter pylori* and previous antibiotics use. *Dig Liver Dis* 2016;48:385-90.
5. Lee BH, Kim N, Hwang TJ, et al. Bismuth-containing quadruple therapy as second-line treatment for *Helicobacter pylori* infection: effect of treatment duration and antibiotic resistance on the eradication rate in Korea. *Helicobacter* 2010;15:38-45.
6. Chung JW, Lee JH, Jung HY, et al. Second-line *Helicobacter pylori* eradication: a randomized comparison of 1-week or 2-week bismuth-containing quadruple therapy. *Helicobacter* 2011;16:289-94.
7. Hwang JJ, Lee DH, Lee AR, et al. Fourteen- vs seven-day bismuth-based quadruple therapy for second-line *Helicobacter pylori* eradication. *World J Gastroenterol* 2015;21:8132-9.
8. Yoon JH, Baik GH, Kim YS, et al. Comparison of the eradication rate between 1- and 2-week bismuth-containing quadruple rescue therapies for *Helicobacter pylori* eradication. *Gut Liver* 2012;6:434-9.
9. Lee SW, Kim HJ, Kim JG. Treatment of *Helicobacter pylori* infection in Korea: a systematic review and meta-analysis. *J Korean Med Sci* 2015;30:1001-9.
10. Graham DY, Lee SY. How to effectively use bismuth quadruple therapy: the good, the bad, and the ugly. *Gastroenterol Clin North Am* 2015;44:537-63.
11. Lee JW, Kim N, Nam RH, et al. Risk factors of rescue bismuth quadruple therapy failure for *Helicobacter pylori* eradication. *J Gastroenterol Hepatol* 2019;34:666-72.
12. Kim JY, Lee SY, Kim JH, et al. Efficacy and safety of twice a day, bismuth-containing quadruple therapy using high-dose tetracycline and metronidazole for second-line *Helicobacter pylori* eradication. *Helicobacter* 2020;25:e12683.
13. Dore MP, Lu H, Graham DY. Role of bismuth in improving *Helicobacter pylori* eradication with triple therapy. *Gut* 2016;65:870-8.
14. Zhang W, Chen Q, Liang X, et al. Bismuth, lansoprazole, amoxicillin and metronidazole or clarithromycin as first-line

Helicobacter pylori therapy. *Gut* 2015;64:1715-20.

15. Lee SK, Lee SW, Park JY, et al. Effectiveness and safety of repeated quadruple therapy in *Helicobacter pylori* infection after failure of second-line quadruple therapy: repeated quadruple therapy as a third-line therapy. *Helicobacter* 2011;16:410-4.

High dose PPI vs. P-CAB: Role of acid inhibition in eradication of *H. pylori*

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CURRICULUM VITAE

Educational Background

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1998-	Instructor (Gastroenterology) in First Department of Medicine, Hamamatsu Univ Sch of Med
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1991-1992	Medical Staff of First Department of Medicine, Hamamatsu Univ Sch of Med
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1987-1988	Resident in Internal Medicine, Hamamatsu Univ Sch of Med
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Research Field

Gastroenterology, Clinical pharmacology, Molecular cancer therapeutics

ABSTRACT

Introduction

In eradication therapy for *H. pylori*, gastric acid secretion is very important. Suppression of gastric acid secretion in eradication of *H. pylori* are associated with (1) increase in the susceptibility of *H. pylori* to antimicrobial agents, (2) stabilization of the antibacterial agent in the stomach, and (3) increase in the concentration of the antibacterial agent in the stomach (*1*). Therefore, the success or failure of gastric acid secretion suppression affects the success or failure of eradication of *H. pylori*

PPI vs Vonoprazan

PPI absorbed from the small intestine reaches the parietal cells and is converted to an active form upon exposure to acids in canaliculi, which inhibits gastric acid by irreversibly binding with a proton pump. This means that PPI cannot completely inhibit gastric acid, because a PPI cannot be converted to the active form without acid. If PPI completely inhibits gastric acid, next coming PPI cannot be converted to an active form. In addition, the active form of PPI is very unstable. PPI must always be supplied from the blood for active PPI to always be present in canaliculi in the parietal cells. However, because PPI is rapidly metabolized in the liver in subjects with extensive metabolizers (EMs) of CYP2C19, the supply of PPI from the blood is lost in a relatively short time after oral administration. Then, the effect of inhibiting gastric acid does not last long. Therefore, in EMs of CYP2C19, suppression of gastric acid secretion by PPI is insufficient.

On the other hand, vonoprazan secreted into the canaliculi of parietal cells does not require activation by acid and inhibits gastric acid by blocking the potassium ion channel of the proton pump in its unchanged form. Moreover, vonoprazan is acid-stable, so it can stay in canaliculi for a long time after the blood supply is lost. Vonoprazan also has a long plasma half-life, so it can strongly suppress gastric acid for a long time.

In the examination with 24-hour intragastric pH monitoring, vonoprazan achieves pH 7 around 3-4 hours after initial oral administration (*2*). This means that gastric acid suppression required for eradication can be achieved from the first day of eradication therapy. On the other hand, PPI does not sufficiently suppress gastric acid secretion on the first day. Gastric acid secretion is gradually decreased as oral administration of PPI continues, but especially in EM of CYP2C19, gastric acid inhibition attained by a PPI is much lower than vonoprazan (*2*).

In the examination using the PPIs at doses used for eradication of *H. pylori*, the pH 4 holding time ratio attained by vonoprazan 20 mg twice daily was 100% (*3*), indicating that almost complete suppression of gastric acid secretion was achieved by vonoprazan 20 mg twice daily. On the other hand, that attained by PPI twice daily was 91%, which seemed incomplete suppression of gastric acid secretion.

This difference in gastric acid secretion inhibitory effect between vonoprazan and PPI is reflected in the eradication rates of *H. pylori*. In all articles comparing vonoprazan and PPIs in the eradication rates with amoxicillin and clarithromycin, the eradication rates of the vonoprazan containing regimens exceeded to the PPI containing regimens (*4*). For this reason, vonoprazan is now the first-class acid inhibitor of eradication of *H. pylori* in Japan.

VPZ vs high dose PPI

High-doses of PPI have been used to solve the problems of inadequate effects of PPIs at the standard doses. That is, in the EMs of CYP2C19, the metabolism of PPI is fast. Therefore, it is an attempt to maintain the blood PPI concentration and increase the effect by dividing doses of high doses of PPIs. Actually, rabeprazole 10 mg four times daily was more effective in suppressing gastric acid secretion than rabeprazole 40 mg once daily. As a result, rescue therapy sometimes used four doses of PPI.

There are several studies that examined the effect of high and divided doses of PPI. The medians of 24-hour intragastric pH attained by four times daily dosing of lansoprazole 30 mg, rabeprazole 10 mg, and esomeprazole 20 mg were 7.4, 6.6 and 6.6, respectively (*5-7*), similar to that attained by vonoprazan 20 mg twice daily (6.8).

In the eradication therapy of *H. pylori*, when individualized high dosed of PPI were administered to EM of CYP2C19, the eradication rate was 96.6% (*8*), which is almost the same as the eradication rate attained by vonoprazan regimens (92.6%) (*9*). In addition, in the other regimen with sitafloxacin, metronidazole and four times daily dosing of 10 mg, the eradication rates were reportedly 90.9% and 92.2% (*10, 11*). The eradication rate by vonoprazan with the same combination of antimicrobial agents was reported as 92.9% (*12*), which is almost the same as that attained by the rabeprazole 10 mg four times daily.

However, dosing scheme of vonoprazan is twice a day, whereas that for PPI is four times a day. Considering compliance, vonoprazan 20 mg twice daily is superior to PPIs. Considering the cost, the price of 2 tablets of VPZ 20 mg is 197.4 X 2 = 394.8 JY, while that of 4 capsules of Esomeprazole 20 mg is 116.2 x 4 = 464.8 JY, indicating that vonoprazan is advantageous in terms of cost. However, when using a generic of rabeprazole 10 mg, the price is 48.3 x 4 = 193.2 JY, which is cheaper. However, in eradication, the duration of period treatment is short. Therefore, difference in cost is not so problematic.

Conclusion

Clinical efficacy of vonoprazan at the standrad dose is advantageous in comparison with the the standard doses of PPI. However, high doses of PPI could provide the the usefulness in eradication almost equal to vonoprazan at the standard dose. However, it is judged that VPZ has superiority in terms of eradication therapy from the viewpoint of ease of oral administration and cost. Currently, the only P-CAB currently clinically available is vonoprazan. It is unclear whether the results of vonoprazan are extrapolated to other P-CABs.

1. T. Furuta, D. Y. Graham, Pharmacologic aspects of eradication therapy for *Helicobacter pylori* Infection. *Gastroenterology clinics of North America* 39, 465-480 (2010).
2. Y. Sakurai *et al.*, Acid-inhibitory effects of vonoprazan 20 mg compared with esomeprazole 20 mg or rabeprazole 10 mg in healthy adult male subjects--a randomised open-label cross-over study. *Aliment Pharmacol Ther* 42, 719-730 (2015).
3. T. Kagami *et al.*, Potent acid inhibition by vonoprazan in comparison with esomeprazole, with reference to CYP2C19 genotype. *Aliment Pharmacol Ther* 43, 1048-1059 (2016).
4. Y. S. Jung, E. H. Kim, C. H. Park, Systematic review with meta-analysis: the efficacy of vonoprazan-based triple therapy on *Helicobacter pylori* eradication. *Aliment Pharmacol Ther* 46, 106-114 (2017).
5. T. Furuta, N. Shirai, F. Xiao, K. Ohashi, T. Ishizaki, Effect of high-dose lansoprazole on intragastic pH in subjects who are ho-

mozygous extensive metabolizers of cytochrome P4502C19. *Clinical pharmacology and therapeutics* 70, 484-492 (2001).

6. M. Sugimoto *et al.*, Rabeprazole 10 mg q.d.s. decreases 24-h intragastric acidity significantly more than rabeprazole 20 mg b.d. or 40 mg o.m., overcoming CYP2C19 genotype. *Aliment Pharmacol Ther* 36, 627-634 (2012).
7. S. Sahara *et al.*, Potent Gastric Acid Inhibition Over 24 Hours by 4-Times Daily Dosing of Esomeprazole 20 mg. *Digestion* 91, 277-285 (2015).
8. T. Furuta *et al.*, Pharmacogenomics-based tailored versus standard therapeutic regimen for eradication of *H. pylori*. *Clinical pharmacology and therapeutics* 81, 521-528 (2007).
9. K. Murakami *et al.*, Vonoprazan, a novel potassium-competitive acid blocker, as a component of first-line and second-line triple therapy for *Helicobacter pylori* eradication: a phase III, randomised, double-blind study. *Gut* 65, 1439-1446 (2016).
10. T. Furuta *et al.*, Sitafloxacin-based third-line rescue regimens for *Helicobacter pylori* infection in Japan. *J Gastroenterol Hepatol* 29, 487-493 (2014).
11. M. Sugimoto *et al.*, High *Helicobacter pylori* cure rate with sitafloxacin-based triple therapy. *Aliment Pharmacol Ther*, (2015).
12. S. Ono, M. Kato, S. Nakagawa, K. Mabe, N. Sakamoto, Vonoprazan improves the efficacy of *Helicobacter pylori* eradication therapy with a regimen consisting of clarithromycin and metronidazole in patients allergic to penicillin. *Helicobacter*, (2017).

Culture-based vs. empirical salvage therapy for *H. pylori* eradication

Jyh-Ming Liou

Internal Medicine, College of Medicine, National Taiwan University, Taipei, Taiwan

CURRICULUM VITAE

Educational Background

M.D. National Yang-Ming University School of Medicine, Taiwan. (1998)

PhD. Graduate Institute of Epidemiology and Preventive Medicine, National Taiwan University, Taipei, Taiwan (2013)

Professional Career

1. Clinical Professor, Internal Medicine, College of Medicine, National Taiwan University (2018 to present)
2. Attending Physician, Division of Gastroenterology, Department of Internal Medicine, National Taiwan University Hospital (2006 to present)
3. Deputy Director, Office of Research and Development, National Taiwan University College of Medicine (2019.8 to present)
4. Deputy Secretary General, Gastroenterological Society of Taiwan (2018.5 to present)
5. Clinical Associate Professor, Internal Medicine, College of Medicine, National Taiwan University (2014 to 2018)

Research Field

He has focused his researches in the management of *H. pylori* infection and molecular epidemiology of GI tract cancers. He has published several studies regarding the treatment of *H. pylori* infection in top journals, including Lancet, Gastroenterology, and GUT. He has received several awards, including Outstanding Research Article Award of Professor Juei-Low Sung's Foundation (2011), Young Investigator Award of National Taiwan University Hospital, (2012), Ching-Shing Medical Award (2013), Ta-You Wu Memorial Award (2013), Young Investigator Award – International Digestive Disease Forum 2015, Outstanding Research Award of National Taiwan University Hospital (2018), Outstanding Research Award of Ministry of Science and Technology, Taiwan (2018), and Emerging Leader Award of JGH Foundation (2019).

ABSTRACT

Refractory *Helicobacter pylori (H. pylori)* infection usually refers to failure after two or more eradication therapies. It is estimated that 3-10% of *H. pylori* infected patients would need third-line rescue therapy. Factors that should be considered in the treatment of refractory *H. pylori* infection include the treatment length, the dosage of antibiotics and proton pump inhibitors (PPIs), the number of drugs, and the types of antibiotics. Regimen given for 14 days has been shown to result in higher eradication rate for triple therapy, sequential therapy, and concomitant therapy than given for 7 or 10-days in the first-line treatment, especially in those who harbor clarithromycin resistant strains. Triple therapy containing higher dose of PPIs or vonoprazan appears to be superior to those containing standard dose PPIs. Four drug therapy, including bismuth or non-bismuth quadruple therapies, is usually superior to triple therapy in the first-line treatment. Addition of bismuth or metronidazole to levofloxacin-amoxicillin-PPIs therapy may also increase its efficacy in the second-line treatment. Therefore, four drug therapies containing higher dosage of PPIs or vonoprazan for 14 days are recommended in the third-line treatment. The most difficult part is the choice of appropriate antibiotics, which may be guided by susceptibility testing or empirically by medication history. However, relatively few randomized trials addressed on this issue. Determination of genotypic resistance may be an alternative to traditional susceptibility testing. Our recent randomized trial showed that the eradication rates of genotypic resistance guided therapy and empirical therapy were 78% and 72%, respectively. Although the difference was not statistically significant, susceptibility testing or genotypic resistance guided therapy is recommended whenever possible. However, properly designed empirical therapy, based on prior medication history (i.e. avoidance of empirical reuse of clarithromycin or levofloxacin), is an acceptable alternative to guided therapy for eradication of *H. pylori* infection after consideration of accessibility, cost, and patient preference.

Antibiotics vs. probiotics for eradication: Impact of eradication on gut microbiota

Nayoung Kim

Department of Internal Medicine, Seoul National University Bundang Hospital, Seongnam, Gyeonggi-do, Korea; Department of Internal Medicine and Liver Research Institute, Seoul National University College of Medicine, Seoul, Korea

CURRICULUM VITAE

Educational Background

Ph.D in Medical Science, Seoul National University: 1991
MSc in Medical Science, Seoul National University: 1989
M.D. in College of Medicine, Seoul National University: 1986
Seoul National University Hospital: Fellow in Gastroenterology: 1990 – 1991
Residency in Internal Medicine: 1987 – 1990

Professional Career

Professor in Department of Internal Medicine, Seoul National University College of Medicine: 2003 – Now
Director of Internal Medicine, Seoul National University Bundang Hospital: July 2018 - Now
Vice President of Korea Federation of Women Science and Technology Association (KOFWST): Jan. 2018 – Dec. 2019
Vice Congress Chairwoman of Korean Society of Gastroenterology: Nov. 2018 – Nov. 2019
President of Cancer Prevention Society: Jan. 2016 – Dec. 2016
Congress Chairwoman of the Korean Society Neurogastroenterology and Motility: April 2015 – April 2017
Director of Scientific Committee, Korean Medical Association: May 2015 – April 2018
Member of National Academy of Medicine of Korea: Jan. 2015 – Present
Director of Medical Insurance Committee and Scientific Committee of Korean Helicobacter and Upper Gastrointestinal Research: Dec. 2006 – Dec. 2008 and Dec. 2004 – Dec. 2006
Research Scholar at Laboratory of Membrane Biology in UCLA: 1999 – 2002
Rhode Island Hospital, Brown University, Research fellow in Gastrointestinal Motility Research Laboratory: 1994 – 1995

Research Field

Various aspects of *Helicobacter pylori*, gastric cancer, GERD, functional dyspepsia, aging of GI organ and sex-specific medicine

ABSTRACT

As *Helicobacter pylori* (*H. pylori*) indications are extended such as prevention of gastric cancer the rate of *H. pylori* eradication is expected to increase in the future. Now the problem is how to eradicate *H. pylori* effectively in the presence of high rate of antibiotic resistance in the world. In 2018 we reported the increase of the prevalence of primary and secondary resistance of *H. pylori* isolates to antibiotics using agar dilution method.[1] It showed that the resistance of clarithromycin (17.2% to 39.2%, $p < 0.001$) and both of levofloxacin and moxifloxacin (4.7% to 28.1%, $p < 0.001$) increased continuously in the 591 patients. In addition, secondary resistance in 149 patients from whom *H. pylori* was cultured after failure of eradication significantly increased in metronidazole, levofloxacin and moxifloxacin. There have been many trials to increase the eradication therapy of *H. pylori*. One method was to add the probiotics to the eradication regimen. Various probiotics of which lactic acid-producing bacteria such as *Lactobacillus* spp., *Bifidobacterium* spp., etc. are most commonly used.[2] The effects of probiotics are carried out through immunological or non-immunological mechanisms. Production of antibiotic substances, competition with *H. pylori* for adhesion receptors, stimulation of mucin production, stabilization of the gut mucosal barrier, etc. are being suggested as non-immunological mechanisms.[2] There is increasing interests regarding the impact of *H. pylori*-eradication on the gastric microbiota. Hong Kong group reported that *H. pylori* eradication elevated the diversity similar to the *H. pylori*-negative group and all different from gastritis, intestinal metaplasia and cancer.[3] However, when we performed the study regarding 10 year follow-up after *H. pylori* eradication the diversity was not recovered in the absence of atrophy. Instead there was a big shift of gastric microbiota from *H. pylori* to genus *Acinetobacter* of *Proteobacter* phylum after *H. pylori* eradication. In addition, there was a changes of gut microbiota when *H. pylori* eradication regimen was taken together with probiotics. Taken together there might be a gut microbial changes and the emergence of antibiotic resistant strains after *H. pylori* eradication trial regardless of *H. pylori* eradication.

References

1. Lee JY, Kim N, Nam RH, et al. Primary and secondary antibiotic resistance of *Helicobacter pylori* in Korea from 2003 to 2018. Helicobacter. 2019;24:e12660.
2. Hwang SW. The effect of *Helicobacter pylori* infection on the gastric microbiota. Kim N, eds. *Helicobacter pylori* pp 479-485. Springer Co. 2016..
3. Li TH, Qin Y, Sham PC, et al. Alterations in gastric microbiota after *H. pylori* eradication and in different histological stages of gastric carcinogenesis. Scientific Reports 2016;7:44935

MEMO

10:40-11:40

Symposium (OIAA): Management of GI disorders in Asia

Chairs:

Jun Haeng Lee (Sungkyunkwan University, Korea)

Sung Woo Jung (Korea University, Korea)

New insights on management of dyspepsia, gastric ulcer and gastritis

Ratha-korn Vilaichone

Department of Medicine Thammasat University Hospital, Pathumthani, Thailand

CURRICULUM VITAE

Education :

MD, Ph.D Faculty of Medicine at Chulalongkorn Hospital Chulalongkorn University, Bangkok, Thailand.
Certified Board Training in Internal Medicine and Gastroenterology
Chulalongkorn University, Bangkok, Thailand.
ECFMG Certificate No: 0-479-946-6
Postdoctoral Fellowship in Gastroenterology
Digestive Disease Section, Department of Medicine, Baylor College of Medicine, Houston, TX (with Prof. David Y. Graham)

Present

Professor of Medicine
Gastroenterology unit, Department of Medicine,
Thammasat University Hospital, Pathumthani, Thailand
Vice Dean, Research Affair and Innovation
Chulabhorn International College of Medicine (CICM)
Thammasat University, Thailand
Secretary General, Digestive Diseases Research Center (DRC), Thammasat University Hospital, Thailand

Reviewer

American Journal of Gastroenterology
European Medical Journal Gastroenterology
Canadian Journal of Gastroenterology and Hepatology
Journal of Gastroenterology and Hepatology

Helicobacter
Annals Academy of Medicine, Singapore
World Journal Gastroenterology
Diagnostic Microbiology Infectious Disease
PLOS ONE Journal
Translation Cancer research
BMC Infectious disease
BMC Cancer

Rebamipide and small bowel bleeding

Than Than Aye

Department of Gastroenterology Sanpya Hospital, Thingangyun, University of Medicine 2, Yangon, Myanmar

CURRICULUM VITAE

Educational Background

1990	M.B.,B.S
1997	M.Med.Sc(Internal Medicine)
2001	M.R.C.P(UK)
2006	Dr. Med.Sc (Gastroenterology)
2008	F.R.C.P(Edinburgh)
2015	Dip.Med.Edu

Professional Career

September 2011 to date	Professor/Head. Department of Gastroenterology Sanpya Hospital, Thingangyun, University of Medicine 2, Yangon
June 2007-to 2011	Associate Professor/Sr: Consultant Physician Department of Gastroenterology. Sanpya Hospital.
March 2003-May 2007	Jr: Consultant Physician
Nov 2001-Feb 2001	Specialist Registrar(Gastroenterology)
March 1999-Oct:2001	SHO. Elderly Medicine and Gastroenterology unit Hull Royal Infirmary, UK
Jan 1997-Feb 1999	Specialist Registrar (General Medicine). Yangon General Hospital
Jan: 1995-Dec: 1997	Post graduate Medicine trainees. University of Medicine I .Yangon
March 1992-Dec:1994	Medical Officer. Kyaingtone District Hospital. Shan State. Myanmar

Research Field

Research interest in *Helicobacter pylori*, gastric cancer, colorectal cancer and cholangiocarcinoma

Treatment of *H. pylori* resistant patient

Miguel Edgardo M. Fores

Makati Medical Center, Philippines

CURRICULUM VITAE

Active Consultant- Makati Medical Center
Residency- Makati Medical Center
Fellowship- Makati Medical Center
Sub-specialty: Gastroenterology
International board certification: American Gastroenterological Association (AGA)
European Endoscopy Training Centre (EETC)

Medical Organizations:
Fellow- Philippine College of Physicians
Member- American Gastroenterological Association
Member- European Gastroenterological Association
Staff member- European Endoscopy Training Centre
Member- Philippine Society of Gastroenterology
Member- Hepatology Society of the Philippines

Follow-up testing after treatment of *H. pylori* infection

Chan Gyoo Kim

Center for Gastric Cancer, Research Institute and Hospital, National Cancer Center, Korea

CURRICULUM VITAE

Educational Background

1987-1993	Medical Doctor, Seoul National University, Korea
1993-1994	Internship, Seoul National University Hospital, Korea
1994-1998	Residency, Department of Internal Medicine, Seoul National University Hospital, Korea
2001-2003	Clinical and Research Fellowship, Division of Gastroenterology, Department of Internal Medicine, Seoul National University Hospital, Korea

Professional Career

2003–present	Staff Physician, Center for Gastric Cancer, Research Institute and Hospital, National Cancer Center, Korea
2015-2019.1	Head of Endoscopy Center, National Cancer Center, Korea
2018-present	Head of Center for Gastric Cancer, National Cancer Center, Korea
2018-present	Adjunct Professor, Department of Cancer Biomedical Science, National Cancer Center Graduate School of Cancer Science and Policy, Korea
2019-present	Chair, Department of Internal medicine, National Cancer Center

Research Field

H. pylori, endoscopic full-thickness resection

11:40-12:20

Special Lecture: Publishing in gastroenterology: An editor's perspective

Chair:

Sang Woo Lee (Korea University, Korea)

Publishing in gastroenterology: An editor's perspective

Yong Chan Lee

Division of Gastroenterology, Yonsei University College of Medicine, Seoul, Korea

CURRICULUM VITAE

Educational Background

He obtained his M.D. degree in 1987 and Ph.D. degree from the Department Medicine, Yonsei University College of Medicine, Korea in 1998.

Professional Career

He played as a visiting research professor at Department of Medicine and Infectious disease, New York University School of Medicine in the Dr. Martin J. Blaser's Lab from September 2000 to August 2002. He is currently the Chief of Division of Gastroenterology, Yonsei University, College of Medicine. He was also the president of the Korean College of *Helicobacter* and Upper Gastrointestinal Research from December 2017 to December 2019. He was the Secretary General of KDDW 2018 and KDDW2019, consecutively.

Research Field

His work focuses on 1) Role of *H. pylori* oncoprotein CagA in gastric carcinogenesis 2) Gastric cancer stem cells and their therapeutic implication 3) GI microbiota and health impacts of human gastric diseases and 4) Early endoscopic diagnosis and treatment of gastric cancer.

12:20-13:20

Luncheon Symposium 1. Therapeutic advance in acid-related disease: The present and the future

Chairs:

Jong-Jae Park (Korea University, Korea)

Dae Young Cheung (The Catholic University of Korea, Korea)

Therapeutic advance in acid-related disease: The present and the future

Kee Don Choi

Department of Gastroenterology, University of Ulsan College of Medicine, Asan Medical Center, Seoul, Korea

CURRICULUM VITAE

Education and Training

1992-1998 M.D. Seoul National University College of Medicine, Seoul, Korea
2002-2004 M.S. Seoul National University College of Medicine, Seoul, Korea
2004-2007 Ph.D. Seoul National University College of Medicine, Seoul, Korea
1998-1999 Internship, Seoul National University Hospital, Seoul, Korea
1999-2003 Resident, Internal Medicine, Seoul National University Hospital, Seoul, Korea
2003-2005 Clinical and research fellowship, Gastroenterology, Seoul National University Hospital, Seoul, Korea

Positions and Employment

2005-2008 Instructor, Department of Gastroenterology, Asan Medical Center, Seoul, Korea
2008-2013 Assistant Professor, Department of Gastroenterology, University of Ulsan College of Medicine, Asan Medical Center, Seoul, Korea
2012-2014 Visiting Researcher, University of California, Irvine, CA, USA
2013-2018 Associate Professor, Department of Gastroenterology, University of Ulsan College of Medicine, Asan Medical Center, Seoul, Korea
2019-current Professor, Department of Gastroenterology, University of Ulsan College of Medicine, Asan Medical Center, Seoul, Korea

Membership and Professional Society

Member, Korean Association of Internal Medicine
Member, Korean Society of Gastroenterology
Member, Korean Society of Gastrointestinal Endoscopy
Member, Korean College of Helicobacter and Upper Gastrointestinal Research
Member, Korean Society of Neurogastroenterology and Motility

13:20-15:00

Scientific session 2: Asian forum: *H. pylori* infection and malignant diseases

Chairs:

Jae Gyu Kim (Chung-Ang University, Korea)

Gwang Ha Kim (Pusan National University, Korea)

Gastric cancer and *H. pylori* in Thailand

Varocha Mahachai

Division of Gastroenterology, Department of Medicine, Chulalongkorn University, Bangkok, Thailand

CURRICULUM VITAE

After graduation from Chulalongkorn University in Thailand, Dr. Mahachai undertook post graduate training in internal medicine and gastroenterology at the University of Alberta, Canada and Postdoctoral Fellowship in clinical pharmacology at the University of California, San Francisco. She served as a faculty member in the Division of Gastroenterology, University of Alberta from 1985 to 1990. In 1990 she joined Chulalongkorn University where she had been actively involved in teaching, research and patient care. She served as a Chief of the Division of Gastroenterology for two terms (2004 – 2008) consecutively.

Dr. Mahachai's major research interests comprise gastric disorders related to NSAID, *H. pylori*, UGI bleeding, mechanisms and risk factors of gastric cancer and gut microbiota. She is also a co-investigator of many collaborative studies on *H. pylori* and gastric cancer risk in Asia.

Dr. Mahachai serves on the editorial board of *Helicobacter*, and the Journal of Neurogastroenterology and Motility. She is an immediate Past-President of the Gastroenterology Association of Thailand and has been a member of the APAGE Council members and an Editor in Chief APDNews. In addition, she is a corresponding fellow in Asia for the European Helicobacter Study Group and a member of a Healthy Stomach Initiative Group. She was recently a co-chair of the joint International GAT/WGO GASTRO 2018 conference in Bangkok, Thailand which gathered over 1350 participants from over 55 countries around the world.

ABSTRACT

Gastric cancer (GC) is the second most common cancer related death in the world. *H. pylori* has been classified by WHO as a class I carcinogen for GC. The infection rate of *H. pylori* is high in most Asian countries but the ASR of GC varies among Asian countries. Other factors such as bacterial virulence, host genetic and environmental factors can influence the outcomes of *H. pylori* infection. We previously demonstrated that the East Asian strain is an independent predictor of gastric cancer and peptic ulcer in Thailand.

Thailand has a low prevalence of GC (3.9 / 100,000 annually) with a 5 year survival ranging from 5 – 15%. The low GC rate corresponds with low rate of premalignant conditions like intestinal metaplasia and gastric atrophy.

Gastric screening program is not recommended in low risk country like Thailand but screening may be focused in high risk populations with alarming symptoms, with family members of GC and those with precancerous lesions or certain ethnic group.

H. pylori is necessary but not sufficient to cause gastric cancer. Specific host, bacterial and environmental factor could influence the outcomes of infection. Gastric cancer remains a high burden of global health therefore the feasibility of eradicating its principal cause should be a logical target for intervention in some countries.

H. pylori and gastric cancer in Myanmar

Than Than Aye

Department of Gastroenterology Sanpya Hospital, Thingangyun, University of Medicine 2, Yangon, Myanmar

CURRICULUM VITAE

Educational Background

1990	M.B.,B.S
1997	M.Med.Sc(Internal Medicine)
2001	M.R.C.P(UK)
2006	Dr. Med.Sc (Gastroenterology)
2008	F.R.C.P(Edinburgh)
2015	Dip.Med.Edu

Professional Career

September 2011 to date	Professor/Head .Department of Gastroenterology Sanpya Hospital, Thingangyun, University of Medicine 2, Yangon
June 2007-to 2011	Associate Professor/Sr: Consultant Physician Department of Gastroenterology. Sanpya Hospital.
March 2003-May 2007	Jr: Consultant Physician
Nov 2001-Feb 2001	Specialist Registrar(Gastroenterology)
March 1999-Oct:2001	SHO. Elderly Medicine and Gastroenterology unit Hull Royal Infirmary, UK
Jan 1997-Feb 1999	Specialist Registrar (General Medicine). Yangon General Hospital
Jan: 1995-Dec: 1997	Post graduate Medicine trainees. University of Medicine I .Yangon
March 1992-Dec:1994	Medical Officer. Kyaingtone District Hospital. Shan State. Myanmar

Research Field

Research interest in *Helicobacter pylori*, gastric cancer, colorectal cancer and cholangiocarcinoma

ABSTRACT

Myanmar is one of the high prevalence of *Helicobacter pylori (H. pylori)* infection among South East Asia region with the prevalence rate of 67.7% in asymptomatic adults and 48.0%in dyspeptic patients in 2015.

World Health Organization established that *H. pylori* is a group I carcinogen. Myanmar has intermediate gastric cancer risk because the strains of *H. pylori* were predominantly Western-type *cag A* and bab A; 94.1% and 90.7%, respectively.

The incidence of gastric cancer was 5.52% in patients with chronic dyspepsia in the 2018 study. Based on GLOBOCAN 2018 data , new cases for gastric cancer in Myanmar was 9.5% in 2017. Regarding pre malignant conditions, we have some data of atrophic gastritis and intestinal metaplasia and association with *H. pylori* infection. Thein Myint et al, published in 2015, showed that 54.7% of the dyspeptic patients had gastric mucosal atrophy in the antrum, and 12.6% of the subjects were in the corpus. It was significantly higher in *H. pylori*-positive, but the histological scores of intestinal metaplasia in the antrum was lower in Myanmar than other countries where the gastric cancer is high prevalent. (eg; 0.19 ± 0.59 in Myanmar, 0.50 ± 0.07 in Japan).Thet Mar Win recently evaluated on total 143 patients with chronic dyspepsia, intestinal metaplasia was found in 23.1 % of subjects and atrophic gastritis was 24.5%. Among them *H. pylori* positive was found in 44.9% of gastric atrophy and 37.34% of intestinal metaplasia.

Other bacteria associated factors which favors high virulent for gastric cancer are *bab* A and Cag A strains of *H. pylori. H. pylori bab*A(Blood group antigen binding adhesion) is an important outer membrane protein that enhances the virulence property of the bacterium. Specific *babA* virulence determinants were more prevalent in a high risk population for gastric cancer compared to low risk population. Myanmar had relatively higher frequencies of strains with *babA*-positivity which was 90.7%. Regarding cag A status, strains isolated from both upper and lower Myanmar were classified as Western-type cagA (55/61, 90.2%). It could be concluded that Myanmar is intermediate risk of gastric cancer (11.0 cases per 100,000 population per year) compared to neighboring countries.

In our retrospective survey on endoscopically proved patients with gastric cancer in 2019, more than 90% of patients with both proximal and distal tumor were over age 40. Five percent of gastric cancer were under 40 years. Men significantly increased prevalence of gastric cancer (75% of proximal and 61.7% of distal location). *H. pylori* infection had no sex differences. Surprisingly, the trend of proximally located gastric cancer(cardia + body) has been increased, almost equal number compared to that of distal location (60% proximal cancer and 61.75% distal cancer). The proportion of proximal cancer in 2004 was only 29% whereas 46% in 2019. Furthermore, more *H. pylori* infection has also been found in proximal cancers; (27% in 2004 and 60% in 2019). In 2009, Aye Lin Aung demonstrated that *H. pylori* infection was exclusively associated with non cardia gastric cancer ($p = 0.021$).

But all the data are single center experiences which could not represent nationwide.

H. pylori infection and malignant diseases in Philippines

Ruter Maralit

College of Medicine, University of the Philippines, Philippines

Status of *H. pylori* infection and related diseases in Vietnam

Vu Van Khien[1], Pham Hong Khanh[3], Doan Vu Nam[3], Dang Thuy Ha[4], Nguyen Thi Ut[4], Tran Huyen Trang[2], Yoshio Yamaoka[5]

Dept. of GI Endoscopy, 108 Central Hospital, Vietnam[1], Dept. of Biology, 108 Centyral Hospital, Vietnam[2], Dept. of Gastroenterology, 103 Hospital, Vietnam[3], Dept. of Gastroenterology, Vietnam National Children's Hospital, Vietnam[4], Dept. of Environmental & Preventive Medicine, Oita University Faculty of Medicine, Japan[5]

CURRICULUM VITAE

Educational Background

September 1983 to August 1989 M.D, Military Medical Academy, Hanoi-Vietnam
September 1995 to August 2000 Ph.D. Military medical Academy, Hanoi-Vietnam

Professional Career

09/1989- 09/1992	Internship, Hanoi Medical University, Hanoi City, Vietnam
05/2001-06/2001	Fellowship in Gastroenterology, Chiangmai University, Chiangmai City, Thailand
06/2002-08/2003	Fellowship in Gastroenterology, Okyama University, Okayama City, Japan
04/2002-06/2004	Fellowship in Gastroenterology, Michigan University, Michigan City, USA
September 2009- present	Associate Professor, Hanoi Medical University & Military Medical Academy

Award of Young Investigator

10th Asian Pacific Congress of Gastroenterology (APCGE) and 7th Asian Pacific Congress of Digestive Endoscopy (APCDE), Yokohama – Japan (September/ 1996)

The Alimentary Disease Week (ADW), Manila - Philippines (November/ 1998).

11st Asian Pacific Congress of Gastroenterology (APCGE) and 8th Asian Pacific Congress of Digestive Endoscopy (APCDE), Hongkong – China (March/2000)

Research Field

His interests include *H. pylori,* GERD, ISB, IBD, gastrointestinal cancers screening and advanced therapeutics endoscopy

ABSTRACT

Helicobacter pylori (*H. pylori*) is now recognized as a worldwide problem, with an estimated of about half of the world's population being infected. It is the most common cause of chronic gastritis, peptic ulcer and is strongly linked to gastric cancer. We review the study of *H. pylori* in Vietnam, including diagnosis, treatment and research orientation in the future.

1. Prevalence of *H. pylori* infection in community and gastric diseases.

The prevalence of *Helicobacter pylori (H. pylori)* infection is high in Vietnam. A large-scale study showed that frequency of *H. pylori* infection made up over 70% in adults and lightly reduced in children. However, the prevalence of *H. pylori* infection among ethnic minorities (adults and children) is lower than that of the Kinh. The prevalence of *H. pylori* among ethnic minorities in Dakak (51.0%) is higher ($p < 0.001$) than that of Laocai province (29.3%). There are many factors may contribute to *H. pylori* infection such as geographical location, ethnicities, dietary habit, etc. Nguyen *et al* was studied the epidemiology of *H. pylori* infection in Khmer children in Mekong Delta (South Vietnam). Research results showed that the prevalence of *H. pylori* infection among children of Khmer ethnicity is 32.1%. *H. pylori* prevalence in patients with chronic gastritis, gastric ulcers, duodenal ulcers and gastric cancer, respectively: 59.9-69.9%, 77.8%, 85.0-95.0% and 79.4%

2. Efficacy of *H. pylori* eradication regimens and drug resistance of *H. pylori*

In Vietnam, in early 1990s, rate of *H. pylori* eradication exceeded 90%. However, recent statistics indicate that *H. pylori* eradication rate has decreased to 60-70%. The most important cause for the reduced success of standard triple therapy is the increasing rate of *H. pylori* clarithromycin, metronidazole, levofloxacin resistance.

We searched the PubMed, EMBASE, Vietnamese National Knowledge Infrastructure, and Vietnamese Biomedical databases from January 2000 to December 2016. The search terms included the following: *H. pylori* infection, antibiotic (including clarithromycin, metronidazole, amoxicillin, levofloxacin, tetracycline, and multidrug) resistance in Vietnam. A total of 308, 412, 523, 408, 399, and 268 *H. pylori* strains were included in this review to evaluate the prevalence of *H. pylori* primary resistance to amoxicillin, clarithromycin, metronidazole, levofloxacin, tetracycline, and multidrug resistance, respectively. Overall, the primary resistance rates of amoxicillin, clarithromycin, metronidazole, levofloxacin, tetracycline, and multidrug resistance were 15.0%, 34.1%, 69.4%, 27.9%, 17.9% and 48.8%, respectively. Secondary resistance rates of amoxicillin, clarithromycin, metronidazole, levofloxacin, tetracycline, and multidrug resistance were 9.5%, 74.9%, 61.5%, 45.7%, 23.5% and 62.3%, respectively.

3. Efficacy of Bismuth-based quadruple therapies for the eradication of *Helicobacter pylori* infection in Vietnam

Two-week bismuth-containing quadruple therapy consisting of a proton pump inhibitor (PPI), bismuth, metronidazole, and tetracycline has been recommended as an alternate first-line therapy or as second-line ther-

apy in the Maastricht IV-2012 Consensus Report. In Vietnam, a four-drug regimen with Bismuth is only available in recent years.

* ***First line therapy:*** The study sample comprised 609 patients of whom 11.7% had functional or uninvestigated dyspepsia, 75.0% chronic gastritis and 13.3% peptic ulcer. Efficacy of eradication therapy: Intention-to-treat eradication was achieved in 538/609 patients (88.3%; 95% CI = 88.6-94.7%), and per-protocol eradication was achieved in 241/259 patients (93.0%; 95% CI = 90.6-96.8%).

* ***Second therapy:*** The study sample comprised 183 patients of whom 9.8% had functional or uninvestigated dyspepsia, 66.2% chronic gastritis and 24% peptic ulcer. Efficacy of eradication therapy: Intention-to-treat eradication was achieved in 162/183 patients (88.5%; 95% CI = 84.0-90.3%), and per-protocol eradication was achieved in 154/168 patients (91.6%; 95% CI = 86.0-95.7%)

3. The new study

Since 2018, we have studied the role of *cag-PAI, OpiA, dupA* in gastric cancer and duodenal ulcer. The study results (gastric cancer, n = 31; duodenal ulcer, n = 43) showed the rate of *cag-PAI, OpiA* in patients with gastric cancer (90.3% and 32.2%, respectively) significantly higher ($p < 0.05$) than patients with duodenal ulcer (62.8% and 9.3%, respectively). However, there was no difference ($p = 0.243$) in *dupA* in patients with duodenal ulcer (65.1%) compared to gastric cancer (51.6%).

Vietnam National Children's Hospital has studied *cagA* and *VacA* in children with gastric disease (chronic gastritis and duodenal ulcer). The research results show that the ratio of *cagA* and *vacA* (+) are 71.1% and 95.6%. Study concluded that children infected with *H. pylori* carrying the *vacA s1m2* and *cagA* (+) genes were 6.5 times more likely to develop peptic ulcer (95% CI is 1.5-27.9) compared to the *vacA s1m2* and *cagA* (-).

H. pylori infection in Malaysia

Alex Hwong Ruey Leow

Associate Professor of Medicine, University of Malaya, Kuala Lumpur, Malaysia

CURRICULUM VITAE

Educational Background

Bachelor of Biomedical Science (Hons)(MALAYA)	1995-1999
MB,BCh,BAO (Hons), LRCPI&LRCSI (National University of Ireland)	1999-2004
M. Med (Internal Medicine) (MALAYA)	2008-2012

Professional Career

Associate Professor of Medicine, University of Malaya
Consultant Gastroenterologist and Hepatologist, University of Malaya Medical Centre
Secretary General of APDW 2020, Kuala Lumpur.
Committee Member of Malaysian Society of Gastroenterology and Hepatology

Research Field

Helicobacter pylori, Inflammatory Bowel Disease

ABSTRACT

H. pylori infection rate is on the decline worldwide. This is particularly so amongst children and young adults where *H. pylori* has virtually disappeared in some populations. An endoscopy-based time trend study from our institution has shown a marked decline in *H. pylori* infection to only 11.1%, and our recently conducted study on young healthy volunteers in Malaysia using ^{13}C urea breath tests found that only 10.6% were found to be positive among the 545 volunteers. Ten (4.2%) of 240 Malay, Fourteen (7.9%) of 177 Chinese and 34 (26.8%) of 127 Indian had the infection. The difference between three ethnic groups were statistically significant (p values<0.001). This study further substantiate declining *H. pylori* prevalence in Malaysia. The high *H. pylori* prevalence observed amongst Indians and Chinese compared to Malays have been well shown in previous studies. However, over time, the prevalence rates in Chinese appeared to have declined dramatically nevertheless prevalence rates in Indians remains highest among the three ethnic groups.

Another population that seldom get the limelight in the study of *H. pylori* infection is the aborigines in Malaysia. A cross-sectional study conducted on aborigines in the peninsular Malaysia on seven isolated settlements spanning across all three major tribes (Negrito, Proto Malay and Senoi) found 115 (44.7%) were *H. pylori* sero-positive with highest sero-prevalence among Negrito (65.7%). Among subjects who were *H. pylori* sero-positive, CagA sero positivity was also significantly higher among Negrito. The highest proportion of studied subjects with positive *H. pylori* serology was from the age group of 30 years old and below (57.9%), Negrito (48.6%) and live in bamboo house (92.3%). The observation higher infectivity rate among the younger cohort of subject is an interesting one. This could be attributed to sampling error, lower life expectancy among the elderly due to poorer healthcare access or higher probability of exposure to outside world over the years due to economy interaction with the city.

Even though the rate of *H. pylori* infection is declining in Malaysia, there are increasing concern on antibiotic resistance in recent years. Primary resistance rate of clarithromycin was repeatedly shown to be low ranging from 0 to 2.1% back in 2011. Subsequently we reported that the resistance rate increased to 6.8% in 2014 and has now reached 12.2% in 2019 reported by another group of researcher in Kuala Lumpur. This is certainly of concern as the current preferred and effective treatment is still clarithromycin-based regimen in Malaysia. Metronidazole resistance has always been high all these years ranging from 32.3% to 56.1% while the resistance rate for amoxicillin remains zero till to date.

Based on the foundation that primary resistance rate of amoxicillin is low, we recently published our data comparing the efficacy of eradication rate between high dose dual therapy (HDDT) using rabeprazole 20mg QID and amoxicillin 1g QID and compared it with a standard clarithromycin based triple therapy using rabeprazole 20mg BD, amoxicillin 1g BD and clarithromycin 500mg BD for 2 weeks among treatment naïve patients. A total of 191. *H. pylori* was eradicated in 86.2% of patients (81/94) (95%CI:77.8-91.7) in the STT group compared to 92.8% (90/97) (95%CI:85.9-96.5) in the HDDT group on ITT analysis. On PP analysis, *H. pylori* was eradicated in 91.0% of patients (81/89) (95%CI: 83.3-95.4) in the STT group compared to 93.8% (90/96) (95%CI:87.0-97.1) in the HDDT group. Side effects were few although many patients in the STT arm complained of bitter taste. The HDDT arm was well tolerated by patients.

Vonorpazan based triple therapy has been shown to be promising even for a 7-day regimen among the Japanese patients. Data outside of Japan is scarce. We recently conducted a randomised trial comparing 7-day

and 14-day vonoprazan based clarithromycin triple therapy among patients with primary *H. pylori* infection in Malaysia. Our interim analysis showed that 97.5% (39/40) were successfully treated with 14-day of treatment regimen whereas only 83.3% (10/12) of subjects were successfully eradicated among patients that were given 7-day regimen. This data needs be interpreted cautiously. Many of our study patients were not able to access the hospital during COVID-19 outbreak. As our government started reducing the restriction, we will start calling the patients back for post eradication test. The number shown here is too small to draw any meaningful conclusion. We await the completion of this clinical trial to address our initial concerns.

H. pylori infection and malignant disease in Mongolia

Sarantuya Gidaagaya, Byambajav Tsogt-Ochir, Gantuya Boldbaatar, Odsuren Munkhdai, Sarantuya Tserenchimed, Oyuntsetseg Khasag, Bira Namdag

Mongolian *Helicobacter pylori* Study Group, Mongolia

CURRICULUM VITAE

Educational Background

PhD student, Mongolian National Helth Sciences University, since 2015
Topic: Chronic hepatitis Delta in Mongolia
Master of Science in Medicine, Health Sciences University of Mongolia, 2009-2014
Topic: Sensitivity and specificity of MON-HP rapid urease test
B.A, General practitioner, Health Sciences University of Mongolia, 1998-2000

Professional Career

Residency: Internal medicine, 2006-2008, State Central Hospital
Gastroenterology fellowship- 2009-2010, Mongolian National University of Medical Sciences
Hepatology fellowship-2010-2011, Taiwan, Cathay General Hospital
Since-2013 Gastroenterologist at Intermed Hospital, Mongolia
2011-2013 Gastroenterologist at University hospital, Mongolian National University of Medical Sciences

Research Field

Helicobacter pylori induced stomach disease
H. pylori eradication treatment
Chronic hepatitis Delta

ABSTRACT

The rapid urease test for *H. pylori* was introduced into clinical practice in Mongolia in 1994.[1] *H. pylori* prevalence in this country ranges between 60-84% depending on study population and detection methods.[2] Most studies were hospital-based and used endoscopy based *H. pylori* detection tests.

In 2018, *Oyuntsetseg Kh et al.* conducted a study among 736 dyspeptic patients from five regions (capital city, four other provinces from western, eastern, southern and central part) of the country and found that 80% of patients had infected with *H. pylori*.[3] *H. pylori* infection rates were 100%, 90.5%, 76.9% and 63.6% among patients with duodenal ulcer, gastric ulcer, open type atrophy and erosive GERD, respectively. Gastric atrophy score was significantly higher in patients with *H. pylori* infection than those without infection. On the other hand gastric intestinal metaplasia was independent from *H. pylori* infection. Age >40 years (OR=3.8, p=0.0001) and excessive salt intake (OR=1.5, p=0.04) increased risk of intestinal metaplasia.

Suvd et al. reported 31% of patients with *H. pylori* induced gastritis and gastric ulcer were infected with *CagA*-positive and VacA s1/s2 strains.[4] In 2011, *Enkh-Amar et al.* found that *cagA* and *vagA s1* type of *H. pylori* strains were 56.8% and 54.5%, respectively.[5] Recently, Tserentogtokh et al. reported 83.1% of patients with *H. pylori* infection were cagA-positive strains.[6] Moreover, 95.8% of *cagA*-positive strains were Western-type *cagA*, which is quite different from other East-Asian countries where the East-Asian type *cagA* strains were dominant. The predominant *vacA* genotype was s1 (83.2%) followed by m1 (56.5%) and m2 (43.5%). Multivariate logistic regression showed that East-Asian type *cagA* was increased risk of gastric mucosal intestinal metaplasia (OR=14, p=0.002) followed by Western type *cagA s*ubtypes (OR=4.5-9.8, p=0.002-0.02) compared with *cagA*-negative strains. *VacA* s1/m1 and s1/m2 genotypes were also increased risk of intestinal metaplasia (OR=6.2, p=0.003 and OR=3.9, p=0.04).

The antibiotic resistance rates among *H. pylori* strains isolated from Mongolia were 35.5% for clarithromycin, 68.4% for metronidazole, 23% for amoxicillin, 25% for tetracycline, 28.2% for erythromycin and 14.5% for nitrofuranton by Etest.[7] Recently another group reported antibiotic resistance rates of *H. pylori* isolates from Mongolia were 8.4% to amoxicillin, 37.4% to clarithromycin, 74% to metronidazole.[8] Additionally 30.5% were resistant to at least 2 antibiotics and 4.8% were resistant to all three antibiotics. Only 15.3% were susceptible to all three antibiotics. They also studied *H. pylori* eradication treatment cure rates by comparing standard triple, bismuth containing quadruple, sequential treatment and susceptibility-based clarithromycin containing triple therapy. The results showed that cure rates were greater in susceptibility-based clarithromycin containing triple therapy group (97.6%) than those who received other treatment regimen (68.5-89.8%).

Mongolia was known as its high incidence and mortality rates from gastric cancer. In 2018, a total of 901 new cases of stomach cancer were recorded, the incidence rate was 28.5 per 100 000 population. Among them 87.5% were diagnosed at stage III, and IV cancer.[9] Study among 484 patient with gastric cancer showed that 75.9% of patients had cancer located upper part of stomach and 29.5% had early gastric cancer.[10] By histologically, 61.8% were undifferentiated adenocarcinoma. Undifferentiated adenocarcinoma was more frequent (73.9%) in advanced gastric cancer while differentiated adenocarcinoma was more prevalent (65.7%) among early gastric cancer. *H. pylori* infection rate in Mongolian gastric cancer patient was 75.9%. *Gantuya et al.* conducted case-control study to determine risk factors of gastric cancer in Mongolia.[11] Totally 45 gastric cancer and 108 non-cancer patients were enrolled. Gastric cancer was located upper part of stomach in 53.3% followed by gas-

tric body (37.8%) and lower part of stomach (8.9%). Also 84.4% of cancer was diagnosed at the advanced stage and 60% was diffuse type cancer. *H. pylori* infection rates were 57.4% in cancer group *vs.* 74.1% in control group. All *H. pylori* positive gastric cancer patients were infected with *cagA*-positive *H. pylori* and 95% of them were Western type *cagA* strains. Atrophy and intestinal metaplasia scores were significantly higher in gastric cancer than control group. Multivariate analysis showed that salty tea (OR= 3.3; 1.4-7.8), tobacco smoking (OR= 3.2; 1.4-7.1), hot beverages (OR= 3.7; 1.6-8.8) and low usage fruits (OR= 2.6; 1.1-6.1) were increased risk for gastric cancer.

H. pylori infection rate was high in Mongolia which contributes higher incidence of gastric cancer. But *cagA* subtype of *H. pylori* isolates from Mongolia was Western-type, which is considered less virulent than East-Asian-type. Also majority of gastric cancers located upper part is more typical of that seen in western populations. Additionally, gastric mucosal intestinal metaplasia score was independent from *H. pylori* infection. Thus, the different CagA types might not explain high incidence of gastric cancer in this country. The environmental risk factors including excessive amount of salt, hot beverage, tobacco smoking and other factors may contributes the gastric cancer development. Further studies should clarify the reason for the high gastric cancer prevalence in Mongolia. In other to decline gastric cancer related mortality, the government launched the National Gastric Cancer Screening Program with endoscopic surveillance this year.

Reference

1. Oyuntsetseg Kh, Byarmaa N, Mendbayar B. *H. pylori* detection rates among patients visited endoscopy unit. Ulaanbaatar. Institute of Medicine. Corference 1996. Abstract book p15.
2. Sarantuya Ts. Oyuntsetseg Kh. *H. pylori* research in Mongolia. Journal of Mongolian *H. pylori* study group. 2013.1:4-32.
3. Khasag O, Boldbaatar G, Tegshee T, et al. The prevalence of *Helicobacter pylori* infection and other risk factors among Mongolian dyspeptic patients who have a high incidence and mortality rate of gastric cancer. *Gut Pathogens.* 2018/04/04 2018;10(1):14.
4. Suvd B. Histological diagnosis of gastric precancerious disease. Thesis. Health Sciences University of Medical Sciences. Ulaanbaatar. 2006.
5. Enkh-Amar A. The comparative study of gastric mcuosal change with *Helicobacter* virulent genes and host immunological polymorphysm. Thesis. Master of Science. Mongolian National University of Health Science. 2011.
6. Tserentogtokh T, Gantuya B, Subsomwong P, et al. Western-Type *Helicobacter pylori* CagA are the Most Frequent Type in Mongolian Patients. *Cancers.* 2019;11(5):725.
7. Mandkhai B-E, Bira N, Yoshio Y, Sarantuya J. Antibiotic resistance of *Helicobacter pylori* in Mongolia. *The Journal of Infection in Developing Countries.* 2017;11(11).
8. Byambajav T-O, Bira N, Choijamts G, et al. Initial Trials With Susceptibility-Based and Empiric Anti-*H. pylori* Therapies in Mongolia. *Front Pharmacol.* 2019;10:394. http://europepmc.org/abstract/MED/31040783
9. Ministry of Health. Institute of Health Development. Health indicators 2018.
10. Matsuhisa T, Yamaoka Y, Uchida T, et al. Gastric mucosa in Mongolian and Japanese patients with gastric cancer and *Helicobacter pylori* infection. *World J Gastroenterol.* 2015/07// 2015;21(27):8408-8417.
11. Gantuya B, Bolor D, Oyuntsetseg K, et al. New observations regarding *Helicobacter pylori* and gastric cancer in Mongolia. *Helicobacter.* 2018;23(4):e12491.

H. pylori infection and gastric cancer in Singapore

Tiing Leong Ang

Changi General Hospital, SingHealth, Singapore; Yong Loo Lin School of Medicine, National University of Singapore; Duke-NUS Medical School, Singapore

CURRICULUM VITAE

Educational Background

Undergraduate:

• MBBS (National University of Singapore): 1995

Postgraduate:

• MRCP (UK): 2000
• Specialist certification in Gastroenterology (Singapore): 2004
• Advanced fellowship in interventional EUS and ERCP (Hamburg, Germany): 2004 – 2005
• Specialist certification in Internal Medicine (Singapore) : 2011
• Graduate Diploma in Healthcare Management and Leadership (Singapore Management University): 2013

Professional Career

Current positions:

• Chief and Senior Consultant, Department of Gastroenterology and Hepatology, Changi General Hospital, SingHealth, Singapore
• Adjunct Professor of Medicine, Yong Loo Lin School of Medicine, National University of Singapore
• Chairperson, Chapter of Gastroenterologists, Academy of Medicine, Singapore

Previous positions

• House officer, Ministry of Health, Singapore: 1995 – 1996
• Medical officer: Ministry of Health, Singapore: 1996 – 1997
• Medical Officer, Singapore Armed Forces: 1997 – 1999
• Medical officer (Basic Specialist Training), Ministry of Health, Singapore: 1999 – 2001
• Registrar (Advanced Specialist Training), Department of Gastroenterology and Hepatology, Changi General Hospital: 2001 – 2004
• Associate consultant, Department of Gastroenterology and Hepatology, Changi General Hospital: 2004 – 2006

- Consultant, Department of Gastroenterology and Hepatology, Changi General Hospital: 2006 – 2011
- President, Gastroenterological Society of Singapore: 2012 – 2014

Research Field

- *H, pylori*, GERD and gastric cancer
- Image enhanced endoscopy and endoscopic resection of superficial gastrointestinal neoplasia
- Interventional endoscopic ultrasound and advanced therapeutic endoscopic retrograde cholangiopancreatography

ABSTRACT

Singapore is a multi-ethnic city state, with the main ethnic groups being Chinese (76.9%), Malays (14.9%) and Indians (7.2%). Gastric cancer (GC) was once among the top three leading cancers for both genders in 1968-1972. In 2013-2017, it fell to being the 7th most common cancer among males, and the 9th among females. The Chinese had the highest risk of developing GC compared to the Malays and Indians for both genders. The seroprevalence rate of *H. pylori* infection was similar between the Chinese and Indians, but much lower among the Malays. The ethnic difference in the GC incidence rate between Chinese and Malays probably mirrored the difference in *H. pylori* infection. However, Indians had high *H. pylori* infection but low GC incidence rate. This might be explained by host susceptibility and concomitant environmental factors. In clinical practice, *H. pylori* eradication for primary and secondary prevention of GC is indicated, and endoscopic surveillance of individuals at higher risk of GC, such as presence of extensive intestinal metaplasia (IM) or atrophy, is performed, with intent of detecting early gastric neoplasia (EGN) amenable to endoscopic resection. The Gastric Cancer Epidemiology Programme (GCEP) was a prospective multicentre cohort study in Singapore with scheduled endoscopic surveillance, designed to investigate the natural history and risk factors contributing to GC amongst 3000 Singapore Chinese subjects aged > 50 years with or without pre-malignant lesions. Besides generation of clinical data, biological materials were banked from GCEP patients both at initial recruitment and subsequent follow-up visits, including blood, gastric biopsies, and gastric juices. Genomic analyses provided insights on the factors governing IM progression. IM patients with shortened telomeres and chromosomal alterations were associated with subsequent dysplasia or GC while patients exhibiting normal-like epigenomic patterns were associated with regression. Another finding was that IM lesions with active DNA damage response (DDR) signalling likely experienced a longer latency at the premalignant state until additional hits that override DDR signalling clonally expand and promote progression. In term of clinical data, previous *H. pylori* infection was associated with an increased risk of EGN, atrophic gastritis and IM, and over a 5-year period of endoscopic surveillance, the incidence rate of EGN was 0.16%. IM was a prevalent endoscopic finding (44.3%), and a significant risk factor for EGN. Risk of EGN increased exponentially with severity of Operative Link on Gastric Intestinal Metaplasia (OLGIM) staging. OLGIM II had significant risk of EGN development, while OLGIM III-IV conferred greatest risk and progressed towards EGN in a shorter period of time (median 1.6 years, range 0.5 - 3.7

years). Significant smoking history further increased the risk of OLGIM II-IV progression to EGN.

References

1. Health Promotion Board. Singapore Cancer Registry 50th Anniversary Monograph (1968 – 2017).
2. Ang TL, Fock KM, Dhamodaran S, Teo EK, Tan J. Racial differences in *Helicobacter pylori*, serum pepsinogen and gastric cancer incidence in an urban Asian population. J Gastroenterol Hepatol. 2005;20(10):1603-9.
3. Krishnan V, Lim DXE, Hoang PM, Srivastava S, Matsuo J, Huang KK, Zhu F, Ho KY, So JBY, Khor C, Tsao S, Teh M, Fock KM, Ang TL, Jeyasekharan AD, Tan P, Yeoh KG, Ito Y. DNA damage signalling as an anti-cancer barrier in gastric intestinal metaplasia. Gut. 2020 Jan 14. [Epub ahead of print].
4. Huang KK, Ramnarayanan K, Zhu F, Srivastava S, Xu C, Tan ALK, Lee M, Tay S, Das K, Xing M, Fatehullah A, Alkaff SMF, Lim TKH, Lee J, Ho KY, Rozen SG, Teh BT, Barker N, Chia CK, Khor C, Ooi CJ, Fock KM, So J, Lim WC, Ling KL, Ang TL, Wong A, Rao J, Rajnakova A, Lim LG, Yap WM, Teh M, Yeoh KG, Tan P. Genomic and Epigenomic Profiling of High-Risk Intestinal Metaplasia Reveals Molecular Determinants of Progression to Gastric Cancer. Cancer Cell. 2018;33(1):137-150.
5. Lee JW, Koh CJ, Lim LG, Ho KY, Chung-King C, Khor CJ, Ooi CJ, Fock KM, So JB, Lim WC, Ling KL, Ang TL, Wong ASY, Rao J, Rajnakova A, The M, Salto-Tellez M, Srivastava S, Feng Z, Yeoh KG. Prospective Cohort Study of Gastric Intestinal Metaplasia Progression and Risk Factors. Gastroenterology 2016;150 (Suppl 1): S867-868.

H. pylori infection and malignant diseases in Indonesia

Marcellus Simadibrata

Division Gastroenterology, Department Internal Medicine Faculty Medicine Universitas Indonesia / Dr. Cipto Mangunkusumo Hospital, Jakarta, Indonesia

CURRICULUM VITAE

Educational Background

2012 Professor in internal medicine and Gastroenterology University Indonesia
2012 Fellow of the American Society of Gastrointestinal Endoscopy
2010 Fellow of the Indonesian Internal Medicine
2009 Fellow of the American College of Gastroenterology
2002 PhD, Universiteit van Amsterdam, Netherland
1998 Consultant of Gastroentero-hepatology
1991 Internal Medicine, University of Indonesia, Jakarta
1981 Medical Doctor, University of Indonesia, Jakarta

Professional Career

Staff of Division Gastroenterology Department Internal Medicine Faculty Medicine Universitas Indonesia 1982-now
Staff of Medical doctor for the President of Republic of Indonesia 2014 - now
Head department of Medical Education Faculty Medicine Universitas Indonesia 2011 – 2018
President of Indonesian Association of Medical Education(INAMED) 2017 – 2023
President of Indonesian Society of Gastroenterology(ISGE) 2011-2016
President of Indonesian Society for Digestive Endoscopy(ISDE) 2007 – 2011

Research Field

Chronic diarrhea: small intestine, large intestine, gluten enteropathy etc
Inflammatory Bowel Diseases(IBD): Access group
Probiotic: Asia Pacific group and South East Asia group
Helicobacter pylori: Indonesian study group of *Helicobacter pylori*

Gastroesophageal Reflux disease(GERD): Validation of GERD Q in Indonesian language, diagnosis and treatment
Endoscopy: Upper GI endoscopy, Colonoscopy, ERCP, EUS

ABSTRACT

Helicobacter pylori (H. pylori) is a Gram-negative organism characterized by polar flagellae and a potent surface urease. *H. pylori* inhabits the mucus layer of the gastric mucosa and is the principal cause of acute and chronic gastritis, duodenal ulcer (DU), and gastric ulcer (GU). World Health Organization and the International Agency for Research on Cancer classified *H. pylori* as a Class I (definite) carcinogen, concluding that it "plays a causal role in the chain of events leading to gastric cancer."

Rani AA reported the prevalence of *H. pylori* tend to decrease recently from 53.8% in 1999 to 13.5% in 2002. Miftasuhur et.al. reported the prevalence of *H. pylori* in 2019 was 30% 105 from 350 patients. The also found that the gastric cancer risk score was highest in patients from Timor, Papuan, and Bugis ethnic populations.

Helicobacter pylori induce chronic active gastritis, then induce atrophic gastritis, intestinal metaplasia then induce dysplasia. At the end *H. pylori* causing cancer of gastric cancer/tumor. Endoplasmic reticulum (ER) stress and the unfolded protein response (UPR) are associated with the pathogenesis of *H. pylori*-induced gastric tumourigenesis. *H. pylori*-associated chronic inflammation contributes to the pathogenesis of several types of cancer and is particularly relevant in the case of *H. pylori*-associated GC. *H. pylori* causes oxidative/nitrosative stress and is a crucial contributing factor to gastric carcinogenesis *H. pylori* also related to MALT lymphoma of the gastrointestinal tract by inducing chronic antigenic stimulation and the microenvironment, bacteria-induced lymphomagenesis, genes and signaling pathways, rRecurrent translocations and other somatic alterations.

The prevalence of *H. pylori* infection in gastric cancer in Indonesia 1998-2015 was between 9.0 – 80.95 %. The prevalence of *H. pylori* infection in gastric MALT lymphoma 1998-1999 was 4.76%. In 2019 there was only 1 report case. *H. pylori infection* in small intestine MALT lymphoma in 2019 there was only 1 report case. No data on the prevalence of *H. pylori* infection in colon cancer/tumor cases.

Key words: *Helicobacter pylori* infection, Gastrointestinal cancer and tumor, Indonesia

15:20-16:20

Plenary session

Chairs:

Sang-Yong Seol (Inje University, Korea)

Sam Ryong Jee (Inje University, Korea)

Plenary Session 1

Effect of *Helicobacter pylori* reinfection on metachronous cancer risk after endoscopic submucosal dissection for early gastric cancer

Jae Ok Park, Jun-hyuk Kang, Myeong-Cheol Kook, Young-IL Kim, Jong Yeol Lee, Chan Gyoo Kim, Il Ju Choi

Center For Gastric Cancer, National Cancer Center, Goyang, Korea

Purpose : Because persistent *Helicobacter pylori* infection is the major risk factor for metachronous gastric cancer development, *H. pylori* treatment is recommended in early gastric cancer (EGC) patients after endoscopic submucosal dissection (ESD). We evaluated reinfection rates of *H. pylori*, and investigated whether reinfection of the organism increases metachronous gastric cancer risk after ESD.

Methods : In this single-center retrospective study, EGC patients who underwent ESD between 2004 and 2015 at the National Cancer Center Korea were included. Patients who were negative *H. pylori* status at initial diagnosis or became negative after *H. pylori* treatment were enrolled. The negative *H. pylori* status was confirmed by histologic assessment at predetermined sites (antrum lesser, corpus lesser and greater curvature). The primary outcome was incidence of metachronous gastric cancer detected at the 1-year or later from the confirmation date of *H. pylori* negative status. We used the Kaplan-Meier method with log-rank test to evaluate primary outcome. The hazard ratio (HR) was calculated using the Cox-proportional hazard regression model.

Results : Among 560 patients included, *H. pylori* reinfection occurred in 69 patients (12.3%) during a median follow-up of 5.0 years (interquartile range, 3.9-6.9 years). The annual reinfection rate was 2.4%. Metachronous gastric cancer developed in 8.7% (6/69) in reinfection group and in 7.1% (35/491) in persistently uninfected group (P=0.794 by log-rank test). The HR for metachronous gastric cancer in reinfection group was 1.12 (95% confidence interval, 0.47-2.68; P=0.794).

Conclusions : In EGC patients with negative *H. pylori* status, *H. pylori* reinfection was not associated with significant increase in metachronous gastric cancer risk.

Key words : Reinfection, Metachronous Cancer, Endoscopic Submucosal Dissection

Plenary Session 2

Isolation of *Helicobacter pylori* using leftover tissue from rapid urease test kit

Eun Jeong Gong[1], Da Kyung Jung[2], Sun Mi Lee[3], Ga Hee Kim[4], Hee Kyong Na[4], Ji Yong Ahn[4], Jeong Hoon Lee[4], Hwoon-Yong Jung[4], Jung Mogg Kim[5]

[1]Departments of Internal Medicine, Gangneung Asan Hospital, University of Ulsan College of Medicine, Gangneung, Korea, [2]Department of Molecular And Cell Biology, University of California, Berkeley, California, United States, [3]Asan Institute For Life Sciences, University of Ulsan College of Medicine, Seoul, Korea, [4]Department of Gastroenterology, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea, [5]Department of Microbiology, Hanyang University College of Medicine, Seoul, Korea

Purpose : Isolation of *H. pylori* is considered difficult because effort should be given during transport and isolation, and additional biopsy tissues are required. We investigated whether *H. pylori* can be cultured from tissue samples used for the rapid urase test (RUT).

Methods : A total of 174 specimens from 87 patients who referred for endoscopy were prospectively included. Pairs of biopsy specimens were obtained from both gastric antrum and the corpus. Among a paired sample, one was placed into RUT kit and another pair was used for culture of *H. pylori*. After detection of urease activity, culture of *H. pylori* was performed.

Results : *H. pylori* was successfully isolated in 72.4% of patients. *H. pylori* was isolated from both specimens in 32 patients, while colonies were recovered only from the antrum or corpus in 31 patients. Eighty-one strains of *H. pylori* were isolated from 141 specimens with positive color changes in RUT kits (57.5%). In addition, 14 strains were isolated from 33 specimens without color change on RUT (42.4%). The median interval between the tissue acquisition and the inoculation onto the isolation media was 3.6 hours (range 0.5 to 27.5 hours) in cases with successful culture, compared to 23.5 hours (range 0.5 to 76.0 hours) of culture failure. Among tissues from positive rapid urease test, 80.4% (45/56) was successful if the tissue was cultured within 4 hours after taking the biopsy.

Conclusions : RUT kits after interpretation can be used as transport media for culturing *H. pylori*, most optimally if used within 4 hours of the test.

Key words : Diagnosis, *Helicobacter pylori*, Isolation

Plenary Session 3

HERES (highly expressed lncRNA in esophageal squamous cell carcinoma) epigenetically regulates WNT-signal pathway in esophageal squamous cell carcinoma

Bo-Hyun You[2], Jung-Ho Yoon[1], Hoin Kang[3], Eun Kyung Lee[3], Jin-Wu Nam[2], Sang Kil Lee[1]

[1]Internal Medicine, Yonsei University College of Medicine, Seoul, Korea, [2]Life Science, College of Natural Sciences, Hanyang University, Seoul, Korea, [3]Biochemistry, College of Medicine, Catholic University, Seoul, Korea

Purpose : Long non-coding RNAs (lncRNAs) exert critical roles in cancer development, but few reseach has been done in ESCC. We has been studying lncRNA in gastrointestinal disorders and has been trying to find lncRNA that can be used as a therapeutic or biomarker in ESCC.

Methods : RNA-seq were performed from 23 paired nontumor/tumor of ESCC patients. HERES was experimentally tested with cell proliferation, colony formation, invasion and migration assays following siRNA-treatment in ESCC cell lines. To identify downstream targets of HERES, the expression and DNA methylation changes of cancer-related genes, NanoString, ChIP-qPCR, MS-PCR, RNA immunoprecipitation assay and RNA fluorescence in situ hybridization were used. KYSE-30 cells were injected into nude mice, respectively, and the xenograft tumors were generated to verify the effect of HERES in tumor progression.

Results : We identified 113 commonly dysregulated lncRNAs in the Korean, Chinese, and TCGA ESCC cohorts. Six lncRNAs were significantly associated with the clinical outcomes of ESCC: two (RP11-1L12.3 and HERES) showed a positive hazard ratio while others (RP11-114H23.1, RP11-114H23.2, CTD-2319I12.1, and LINC00330) showed a negative hazard ratio. The reduction of HERES, which is most significantly upregulated in ESCC, repressed cell proliferation, migration, invasion and colony formation in ESCC cell lines and tumor growth in xenograft models. HERES appeared to simultaneously regulate CACNA2D3, SFRP2 and CXXC4 to activate Wnt signaling pathways through a chromatin remodeler, EZH2.

Conclusions : HERES holds a substantial potential to be developed as not only a biomarker and a therapeutic target to cure ESCC caused by defective Wnt signaling pathway.

Key words : Esophageal Squamous Cell Carcinoma, Long Non-coding RNAs, RNA-seq

Plenary Session 4

Results from the pilot study of the multicentre randomised trial of *H. pylori* eradication and pepsinogen testing for prevention of gastric cancer mortality (the GISTAR Pilot study)

Jin Young Park[1], Inese Polaka[2,3], Sergei Parshutin[2], Ilze Kikuste[2,3,4], Sergejs Isajevs[2,3,5], Inta Liepniece-karele[2,5], Ilva Daugule[2,3], Danute Ražuka-ebela[3], Rolando Herrero[1], Marcis Leja[2,3,4]

[1]Prevention and Implementation Group, International Agency for Research on Cancer, Lyon, France, [2]Institute of Clinical and Preventive Medicine, Institute of Clinical and Preventive Medicine, Riga, Latvia, [3]Faculty of Medicine, University of Latvia, Riga, Latvia, [4]Digestive Diseases Centre, Gastro, Riga, Latvia, [5]Academic Histology Laboratory, Academic Histology Laboratory, Riga, Latvia

Purpose : The GISTAR study investigates whether *H. pylori* screening-treatment and endoscopic follow-up of those with serological evidence of atrophic gastritis can reduce gastric cancer mortality in East Europe. Prior to launching the large-scale intervention, a pilot study was conducted in Latvia to evaluate the trial assumptions and appropriateness of the chosen tools.

Methods : GISTAR Pilot includes 3,447 asymptomatic participants (40-64 years old). All participants were randomly assigned either to Intervention (n=1,724) or Control (n=1,723) Group. Detailed information on socio-demographic/lifestyle factors and FIT tests (all participants) plus blood (Intervention Group) and endoscopic biopsies for histology (n=1,047) were obtained. The intervention included *H. pylori* eradication (10-day triple therapy) and endoscopic examinations of those with altered pepsinogens and gastrin-17 levels. Participants in the Control Group received routine care.

Results : As expected, there was no significant difference between the Intervention and Control Groups in terms of participant characteristics. In the Intervention Group, *H. pylori* prevalence (by serology) was 68%. Having Russian nationality, heavy drinking and spicy food consumption were the main risk factors for the infection. *H. pylori* eradication was successful in 87%. In a subgroup analysis, *H. pylori* serology showed a suboptimal accuracy compared to histology (the gold standard). Additional analyses using the Pilot data are underway.

Conclusions : The study will add to the currently available evidence whether the population-based *H. pylori* treatment is acceptable and reduces gastric cancer burden in East Europe. In addition, the study evaluates the strategy of combining population-based *H. pylori* eradication with pepsinogen testing with endoscopic surveillance in participants with detected precancerous lesions, which has not been evaluated before.

Key words : Gastric Cancer Prevention, GISTAR Pilot, Randomised Trial

MEMO

16:20-17:20

Scientific session 3: Identification and management of high-risk populations in gastric cancer

Chairs:

Ki-Baik Hahm (CHA University, Korea)

Seong Woo Jeon (Kyungpook National University, Korea)

Transcriptome based molecular subtyping for precision medicine in gastric cancer

Jae-Ho Cheong

Department of Surgery and Department of Biomedical Systems informatics, Yonsei University College of Medicine, Seoul, Korea

CURRICULUM VITAE

Educational Background

Yonsei University, Seoul, KOREA	M.D.	1995	Medicine
Yonsei University, Seoul, KOREA	Ph.D.	2006	Tumor Biology
UT MD Anderson Cancer Center, Houston, Tx	Postdoc	2006~2009	Molecular Therapeutics and Systems Biology

Professional Career

2007-2009	Odyssey Fellow, Department of Systems Biology, Kleberg Center for Molecular Markers, UT MD Anderson Cancer Center
2006-	Professor, Department of Surgery, Yonsei University College of Medicine, Seoul, KOREA
2017-	Vice Dean, Research Affairs, Yonsei University College of Medicine, Seoul, Korea
2019-	Director, Institute for Precision Cancer Therapy, Yonsei Cancer Center, Yonsei University College of Medicine,

Research Field

Cancer genomics, Cancer metabolism, Tumor molecular biology, Precision oncology, Drug discovery

ABSTRACT

Recent molecular classification of solid cancers has identified subtypes which have distinct driver genomic alterations and biological processes reflected on transcriptome profiles. A deeper understanding of the molecular basis of cancer subtypes might lead to new classes of therapies that selectively target aberrant molecular mechanisms that are crucial for the survival and proliferation of cancer cells. Moreover, identifying molecular subtypes related to therapy responsiveness for cytotoxic and targeted therapies that have been used for many years will facilitate a more stratified and rationalized approaches to current standard of care.

Here I will discuss the patient-centric development of precision medicine clinical translational platform that will incorporate the power of molecular subtyping of large scale transcriptome analysis that identifies distinct subtypes of GC. Careful assessment of GC patients' molecular tributes to assign each patient into appropriate subgroup will guide genomic information driven precision medicine. Moreover, patients with "chemorefractory" subtype might be benefited from alternative therapeutic approaches based on their potential driver pathways while spared from ineffective current standard chemotherapy only causing debilitating side effects.

Collectively, clinical development of molecular assays to identify tumor subtypes related to clinical outcome and therapy responsiveness and to test subtype-specific therapies may contribute to implementation of precision cancer medicine.

Epigenomic risk stratification of healthy people after *H. pylori* eradication

Toshikazu Ushijima

Division of Epigenomics, National Cancer Center Research Institute, Japan

CURRICULUM VITAE

Educational Background

Mar. 31, 1986	M.D., Tokyo University, School of Medicine
April, 1997	Ph.D., Tokyo University

Professional Career

Jun. 1, 1986	Physician in training, Tokyo University Hospital
Jun. 1, 1988	Hematologist, Kanto-teishin Hospital
Jun. 1, 1989	Research Resident at National Cancer Center Research Institute (NCCRI)
Feb. 1, 1991	Research Staff, Carcinogenesis Division, NCCRI
Apr. 1, 1994	Section Head, Carcinogenesis Division, NCCRI
Aug. 1, 1999	Chief, Carcinogenesis Division, NCCRI
Nov. 1, 2010	Chief, Division of Epigenomics
Apr. 1, 2011- Mar. 31, 2014	Senior Deputy Director, NCCRI

Research Field

From 1989 to 1991	Research on mutation and its signatures induced by food-born carcinogen
From 1991 to 1994	Research on gastric cancer susceptibility genes
From 1994 to 1999	Establishment of a novel genome-wide screening method for differences in DNA methylation
From 1999 to 2010	Research on DNA methylation in gastric and breast cancer, methylation induction by *H. pylori*-triggered chronic inflammation, epigenetic field cancerization, and epigenetic prognostic marker of neuroblastoma
From 2010 to present	Demonstration of clinical utility of epigenetic field for cancer risk diagnosis, and development of a novel DNA demethylating agent

ABSTRACT

Gastric cancer is heavily influenced by epigenomic abnormality, namely aberrant DNA methylation [Yoda, Gastric Cancer, 18:65, 2015; Yamashita, PNAS, 115:1328, 2018], which is maintained even after cell division. Long before a gastric cancer develops, *H. pylori* infection potently induces aberrant DNA methylation in gastric epithelial cells via chronic inflammation [Niwa, Cancer Res, 70:1430, 2010; Ushijima, Clin Cancer Res, 18:923, 2012], and the aberrant DNA methylation induced in gastric stem cells persists for life. Indeed, the level of aberrant DNA methylation in gastric mucosa was correlated with gastric cancer risk [Maekita, Clin Cancer Res, 12:989, 2006].

In a multi-center prospective study to predict the risk of metachronous gastric cancer among gastric cancer patients cured by endoscopic treatment, 826 gastric cancer patients were enrolled, and 795 patients were followed for a median period of 5.46 years. It was shown that the quartile with the highest methylation level had a multivariate-adjusted HR of 3.0 (95%CI:1.58-5.72) compared with the quartile with the lowest methylation level [Asada, Gut, 64:388, 2015; Maeda, Gut, 66:1721, 2017]. This study showed that risk stratification based upon accumulation levels of epigenomic damage is indeed clinically possible.

To use the epigenomic risk stratification for high-risk healthy people after *H. pylori* eradication, we have started another multicenter prospective study, in which we have completed recruitment of 1,880 healthy people with open-type atrophy after *H. pylori* eradication. For this study, we have isolated better methylation markers that can assess the overall epigenomic damage in gastric tissues and are not affected by blood cell contamination or aging [Maeda, Gastric Cancer, 21:745, 2018]. We are also collecting two pieces of biopsy from the antrum and body to assess the overall risk of an individual. Comparison of the initial methylation profiles of these healthy but clinically high-risk people with those of cancer patients in the previous prospective study demonstrated a clear difference, and a large hazard ratio between people with high methylation levels and those with low levels can be expected. We have completed the follow-up of 1.7 years so far, and interim analysis will be conducted in one or two years.

Genetic predisposition and alterations

Hark Kyun Kim

Center for Gastric Cancer, National Cancer Center, Korea

CURRICULUM VITAE

Educational Background

M.D. 1991, Seoul National University College of Medicine
Ph.D. 2000, Seoul National University College of Medicine
Resident and clinical fellow (hematology and oncology): Seoul National University Hospital
Visiting research fellow: 2000-2001, Japan National Cancer Center
Visiting research fellow: 2005-2008, US National Cancer Institute

Professional Career

2001-present Principal Investigator and medical oncologist, Center for Gastric Cancer, National Cancer Center of Korea

Research Field

Proteogenomics of gastric cancer
Targeted and immune therapy for gastric cancer

ABSTRACT

Whole exome sequencing analyses were performed to evaluate somatic and germline mutations in diffuse gastric cancers among Koreans who were 45 years or younger, under the collaborative work of Asan Medical Center, Keimyung University, Pusan National University, Chonnam National University Hwasun Hospital, Chungnam National University, Ajou University, Dong-A University, Kosin University, and National Cancer Center. Significantly recurrent somatic mutations in early-onset (45 years or younger) diffuse gastric cancers among Koreans included the cadherin 1 gene (CDH1), TP53, ARID1A, KRAS, PIK3CA, ERBB3, TGFBR1, FBXW7, RHOA, and MAP2K1. A higher proportion of early-onset diffuse gastric cancers had mutations in CDH1 (42.2%) or TGFBR1 (7.3%) compared with late-onset diffuse gastric cancers among Koreans (17.4% and 0.9%, respectively). In contrast, a relatively smaller proportion of early-onset diffuse gastric cancers contained mutations in RHOA (9.2%). Late-onset diffuse gastric cancers in The Cancer Genome Atlas also contained less frequent mutations in CDH1 and TGFBR1 and more frequent RHOA mutations, compared with early-onset diffuse gastric cancers. Early-onset diffuse gastric cancers from women contained significantly more mutations in CDH1 or TGFBR1 than early-onset diffuse gastric cancers from men. CDH1 alterations, but not RHOA mutations, were associated with shorter survival times in patients with early-onset diffuse gastric cancers (hazard ratio, 3.4; 95% confidence interval, 1.5-7.7).

The homologous recombination defect-related BRCA mutation signature was one of six mutation signatures that were identified in diffuse gastric cancer and its signature fraction positively correlated with the degree of aneuploidy (R=0.22). The top three BRCA signature-richest tumors, all of which were from EODGC cases and aneuploid, presented germline mutations in either PALB2 or RAD51D. Thus, germline mutations in PALB2 and RAD51D were associated with aneuploidy in early-onset diffuse gastric cancer. Overall, pathogenic germline mutations identified among early-onset (45 years or younger) diffuse gastric cancer included TP53 (2%), PALB2 (2%), CDH1 (1%), ATM (1%), and RAD51D (1%). Among these germline mutations, only the truncating CDH1 mutation was associated with family history, while the others were not.

MEMO

The 28th Annual Meeting of the Korean College of *Helicobacter* and Upper Gastrointestinal Research &
the 3rd Seoul International Symposium on *Helicobacter* and Upper Gastrointestinal Diseases

July 18 (Sat), 2020

9:00-9:40

Free paper session 1

Chairs:

Dong Ho Lee (Seoul National University, Korea)

Jung Mogg Kim (Hanyang University, Korea)

Free Paper 1-1.

Efficacies of a tailored eradication strategy versus empirical bismuth-containing quadruple therapy as first-line eradication for *Helicobacter pylori* infection in Korean patients: A prospective, comparative, open trial

Youn I Choi, Jun-Won Chung

Gastroenterology, Gachon University College of Internal Medicine, Incheon, Korea

Purpose : This study was to compare the efficacy and safety of a tailored eradication (TR) strategy based on the presence of a 23S ribosomal RNA point mutation and those of empirical bismuth-based quadruple therapy (EBQT) regimen as first line eradication.

Methods : We prospectively enrolled, conducted open-label, comparative study, and retrospectively reviewed the data which included patients over 18 years of age with *H. pylori* infection. *H. pylori*-positive patients diagnosed by rapid urease test, Giemsa stain, or dual priming oligonucleotide polymerase chain reaction (DPO-PCR) were enrolled from May 2016 to September 2018 at Gil Medical Center. Patients with *H. pylori* infection received either a TR regimen or the EBQT regimen. In the tailored therapy group that underwent DPO-PCR testing, patients with A2142G and/or A2143G point mutations were treated with a bismuth-containing quadruple regimen. The eradication rate and patient-reported side effects rates of *H. pylori* eradication success were evaluated and compared between the groups.

Results : A total of 200 patients were designated to the TR (n = 100) or EBQT groups (n = 100). The first-line eradication rate of *H. pylori* did not differ between the groups (93.0% vs. 95.0%, P = 0.7). The rate of eradication-related side effects for TR was 12.0%, which differed significantly from that of EBQT (43.7%) for first-line treatment (P < 0.001).

Conclusions : TR *H. pylori* eradication using DPO-PCR may be equally efficacious, with less treatment-related complications, compared to EBQT in Korea, where clarithromycin resistance is high.

Key words : *Helicobacter pylori*, Eradication, Tailored

Table 1. Rates of successful *H. pylori* eradication and complications

Eradication rate	Tailored therapy using DPO-PCR (n=100)	Empirical bismuth based quadruple therapy (n=104)	*P*
Intention-to-treat	**93(93.0%)**	**98(94.2%)**	**0.9**
Per-protocol	**93/100 (93.0%)**	**95/100 (95.0%)**	**0.7**

Abbreviation: DPO-PCR, dual priming oligonucleotide PCR

Table 2. Eradication related adverse events

	Tailored therapy using DPO-PCR (n=100)	Empirical bismuth based quadruple therapy (n=104)	*P*
Eradication related Side effects			**<0.001**
No	**88(88.0%)**	**59(56.7%)**	
Yes	**12(12.0%)**	**45(43.7%)**	
Abdominal discomfort	0(0.0%)	1(1.0%)	
Nausea/vomiting	6(6.0%)	12(11.5%)	
Diarrhea/loose stool	0(0.0%)	12(11.5%)	
Dyspepsia	4(4.0%)	10(9.6%)	
General weakness	2(2.0%)	6(5.8%)	
Taste disturbance	0(0.0%)	4(3.8%)	
Treatment Compliances			
	100 (100.0%)	**100(96.2%)**	**0.2**

Abbreviation: DPO-PCR, dual priming oligonucleotide PCR

Free Paper 1-2.

Current trend in the *Helicobacter pylori* eradication rates of first-line sequential and concomitant therapies in Korea: A nationwide multicenter retrospective study over the 9 years

Byung-Wook Kim[1], Bong Eun Lee[2], Jie-hyun Kim[3], Jin Il Kim[4], Jun-Won Chung[5], Seong Woo Jeon[6], Joon Sung Kim[1], Jeong Hoon Lee[7], Ji Hyun Kim[8], Nayoung Kim[9], Ju Yup Lee[10], Seung Young Seo[11], Seon-Young Park[12], Sung Eun Kim[13], Moon Kyung Joo[14]

[1]Internal Medicine, Incheon St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Incheon, Korea, [2]Internal Medicine, Pusan National University School of Medicine, Busan, Korea, [3]Internal Medicine, Gangnam Severance Hospital, Yonsei University College of Medicine, Seoul, Korea, [4]Internal Medicine, Yeoido St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Seoul, Korea, [5]Internal Medicine, Gachon University College of Medicine, Incheon, Korea, [6]Internal Medicine, School of Medicine, Kyungpook National University, Daegu, Korea, [7]Internal Medicine, University of Ulsan College of Medicine, Asan Medical Center, Seoul, Korea, [8]Internal Medicine, Pusan Paik Hospital, Inje University College of Medicine, Busan, Korea, [9]Internal Medicine, Seoul National University College of Medicine, Seongnam, Korea, [10]Internal Medicine, Keimyung University School of Medicine Dongsan Medical Center, Daegu, Korea, [11]Internal Medicine, Chonbuk National University Hospital, Chonbuk National University Medical School, Jeonju, Korea, [12]Internal Medicine, Chonnam National University School of Medicine, Gwangju, Korea, [13]Internal Medicine, Kosin University College of Medicine, Busan, Korea, [14]Internal Medicine, Korea University College of Medicine Guro Hospital, Seoul, Korea, [15]Internal Medicine, Jeju National University School of Medicine, Jeju, Korea, [16]Internal Medicine, Chungbuk National University College of Medicine, Daejeon, Korea, [17]Internal Medicine, Hallym University College of Medicine, Chuncheon, Korea, [18]Internal Medicine, Gyeongsang National University Hospital, Jinju, Korea

Purpose : Eradication rate of standard triple therapy for *H. pylori* has declined to an unacceptable level, and alternative regimens such as concomitant and sequential therapy have been introduced. We aimed to assess the current trend of eradication rates of concomitant and sequential therapies as for the first-line *H. pylori* eradication in Korea.

Methods : A nationwide multicenter retrospective study was conducted including 18 secondary or tertiary medical centers from January 2008 to December 2017. We included 3,940 adults who had test to confirm *H. pylori* eradication within 1 year after first-line concomitant or sequential therapy.

Results : First-line concomitant and sequential therapy was prescribed for 2,609 and 1,331 patients, respectively. The overall eradication rate of concomitant therapy was significantly higher than sequential therapy (91.6% vs. 85.7%, $P < 0.001$). In time trend analysis, concomitant regimen also showed higher eradication rate from 2015 to 2017 with an increasing trend. Among 289 patients with first-line eradication failure, second-line bismuth-based quadruple therapy and quinolone-based triple therapy was given for 202 (69.9%) and 71 (24.6%) patients, respectively. Bismuth-based quadruple therapy showed significant higher eradication rate than quinolone-based triple therapy.

Conclusions : Concomitant therapy was superior to sequential therapy as the first-line *H. pylori* eradication, showing consistent higher eradication rate with an increasing trend over the last 9 years. In patients with eradication failure after concomitant or sequential therapy, bismuth-based quadruple therapy is preferable than quinolone-based triple therapy in Korea.

Key words : *Helicobacter pylori*, Eradication, Sequential Therapy

Free Paper 1-3.

Follow up reinfection situation of *Helicobacter pylori* after successful eradication: A single-center study in Vietnam

Nguyen Thi Hao[1], Hang Dao Viet[1,2,3]

[1]Institute of Gastroenterology and Hepatology, Hanoi Medical University, Hanoi, Vietnam, [2]Internal Medicine Faculty, Hanoi Medical University, Hanoi, Vietnam, [3]Endoscopy Center, Hanoi Medical University Hospital, Hanoi, Vietnam

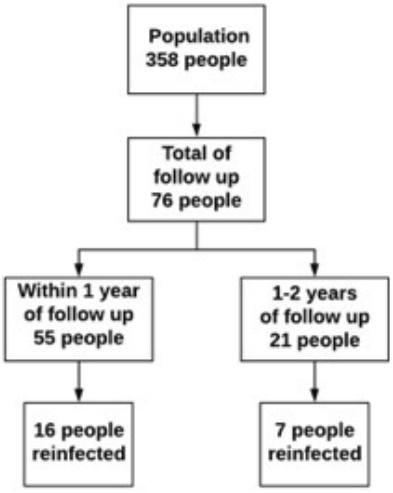
Purpose : *Helicobacter pylori* (*H. pylori*) is a common cause of peptic ulcers and gastrointestinal cancer. High prevalence and antibiotics resistance of *H. pylori* is a challenge in Vietnam. However, the data of reinfection after successful eradication is limited. The study aims to evaluate the rate of *H. pylori* reinfection and associated factors.

Methods : A prospective cohort study was conducted at the Institute of Gastroenterology and Hepatology from October 2017 to October 2019. Patients with successful *H. pylori* eradication confirmed by rapid urease test or C-urea breathe test were enrolled in the study. Then we followed up patients after at least 6 months to check the *H. pylori* by breathe test or urease test and asked questionnaire to find the associated factors.

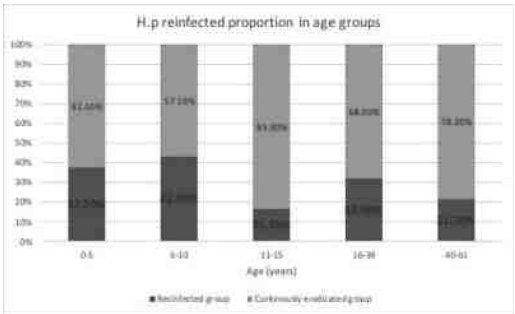
Results : Among 358 successfully eradicated patients, only 76 patients came back due to gastrointestinal symptoms, in which 23 patients accounting for 30.3% were *H. pylori* positive. The mean follow-up time was 9.3 months. The number of patients followed up within 1 year was 55 (72.4%), and from 1 to 2 years was 21 (27.6%). Within the first year, 16 patients were reinfected *H. pylori* (29.1%). 61.8% patients had a past history of peptic ulcer disease. The reinfection rate in female (37.2%) was higher than in male (21.2%). Children from 6 to 10 years old had the highest rate (42.9%).

Conclusions : The reinfection rate of *H. pylori* in the population with recurrent symptoms was 30.3%. Reinfection rate was more dominant in children and female.

Key words : *Helicobacter pylori*, Eradication, Reinfection



Variable category	Total (76, 100%)	Reinfection group (23, 30.3%)	Continuously eradicated group (53, 69.7%)	p-value
Age (years)	**N = 76**	**N = 23**	**N = 53**	p = 0.64
≤5	8	(3, 37.5%)	(5, 62.5%)	
6-10	14	(6, 42.9%)	(8, 57.1%)	
11-15	6	(1, 16.7%)	(5, 83.3%)	
16-39	25	(8, 32.0%)	(17, 68%)	
40-61	23	(5, 21.7%)	(18, 78.3%)	
Gender	**N = 76**	**N = 23**	**N = 53**	p = 0.13
Male	33	(7, 21.2%)	(26, 78.8%)	
Female	43	(16, 37.2%)	(27, 62.8%)	
Peptic ulcer disease	**N = 76**	**N = 23**	**N = 53**	p = 0.69
Yes	47	(15, 31.9%)	(32, 68.1%)	
No	29	(8, 27.6%)	(21, 72.4%)	



Free Paper 1-4.

Changes in the fluoroquinolone resistance of *Helicobacter pylori* over a 14-year period and discovery of a novel mutation in DNA gyrase: A single-center study in Korea

Jae Yong Park, Su Yeon Rhie, Jeong Wook Kim, Beom Jin Kim, Jae Gyu Kim

Department Of Internal Medicine, Chung-ang University College of Medicine, Seoul, Korea

Purpose : Eradication failure of *Helicobacter pylori* is increasing due to antimicrobial resistance. The aim of this study was to investigate the changes in the prevalence and mechanism of fluoroquinolone resistance of *H. pylori* in Korea.

Methods : *H. pylori* strains were isolated from 143 patients and 48 patients at a single tertiary hospital in 2005-2006 and 2017-2018, respectively. The minimum inhibitory concentrations (MICs) of fluoroquinolone were determined by the serial 2-fold agar dilution method. The breakpoint for fluoroquinolone resistance was > 1.0 μg/mL. Sequence analyses of *gyrA/gyrB* and natural transformation studies were performed to investigate the mechanism of resistance.

Results : The resistance rates for levofloxacin and moxifloxacin were equally 16.8% (24/143) in 2005-2006, which greatly increased up to 43.8% (21/48) for both antibiotics in 2017-2018. The range of MIC values for resistant strains increased overall, from 2-8 μg/mL in 2005-2006 to 4-16 μg/mL in 2017-2018. Among 24 resistant strains from 2005-2006, mutation of *gyrA* was observed in 95.8% (23/24). Transformation experiments re-

Table. Changes in the prevalence of fluoroquinolone resistance of *H. pylori* isolates over a 14-year period

	Prevalence of fluoroquinolone resistance (resistance strains / total strains)	
	2005-2006	2017-2018
Levofloxacin	16.8% (24/143)	43.8% (21/48)
Moxifloxacin	16.8% (24/143)	43.8% (21/48)

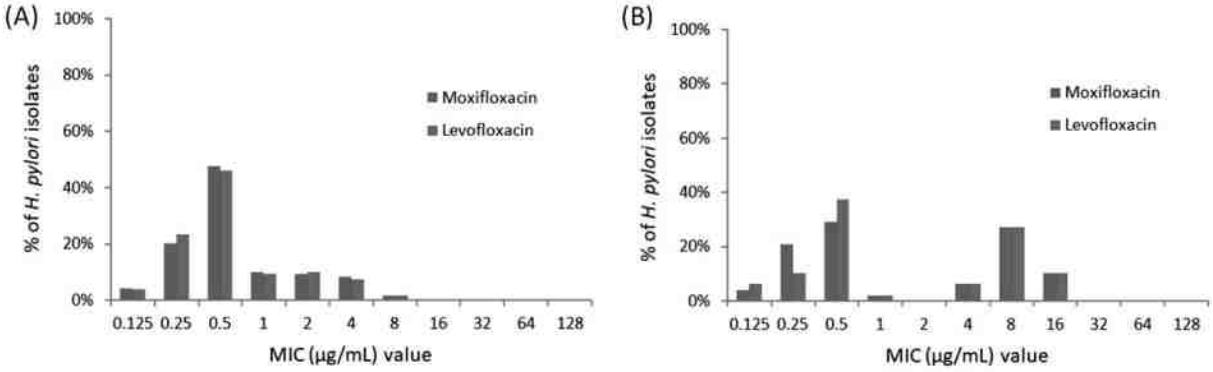


Figure. Distribution of fluoroquinolone MICs of *H. pylori* strains (A) The distribution of MIC values for mutant strains ranged from 2-8 μg/mL in 2005-2006. (B) The distribution of MIC values for mutant.

vealed that the mutation of *gyrB*, observed in 12.5% (3/24), was not associated with resistance. All of 21 resistant strains from 2017-2018 showed *gyrA* mutation. Among these, a novel mutation of *gyrA* (Gly-85) which has never been reported before, was detected in one strain and was confirmed to be associated with fluoroquinolone resistance by natural transformation experiments.

Conclusions : The prevalence of fluoroquinolone resistance of *H. pylori* has markedly increased over time in Korea. Fluoroquinolone should be carefully used for *H. pylori* eradication in Korea, considering the high prevalence of fluoroquinolone resistance.

Key words : *Helicobacter pylori*, Antibiotic Resistance, Fluoroquinolone

9:40-10:20

Free paper session 2

Chairs:

Hoon Jai Chun (Korea University, Korea)

Jeong Seop Moon (Inje University, Korea)

Free Paper 2-1.

Clinical significance of TWIST-expressing circulating tumor cells in patients with esophageal squamous cell carcinoma

Moon Won Lee, Gwang Ha Kim, Bong Eun Lee, Seung Min Hong, Dong Chan Joo, Tae Kyoung Ha, Hyun Jung Lee, Su Jin Park

Department of Internal Medicine, Pusan National University Hospital, Busan, Korea

Purpose : Compared to other gastrointestinal tract cancers such as colorectal or gastric cancer, there are relatively few reports on circulating tumor cells (CTCs) and Twist, a marker of epithelial-mesenchymal transition, in patients with esophageal squamous cell carcinoma (ESCC). In this study, we evaluated clinical significance of Twist expression in CTCs in patients with ESCC.

Methods : Peripheral blood samples for CTC analyses were prospectively obtained from 52 patients with ESCC prior to treatment between September 2017 and September 2019. CTCs were detected using a centrifugal microfluidic system based on a fluid–assisted separation technique, and CTCs positive for Twist immunostaining were defined as Twist (+) CTCs.

Results : Of 52 patients with ESCC, CTCs and Twist (+) CTCs were detected in 44 (84.6%) patients and 39 (75.0%) patients, respectively. CTC and Twist (+) CTC counts were significantly higher in patients who were >65 years old and had a large tumor (> 3 cm) than in those who were ≤ 65 years old and had a small tumor (≤ 3 cm). There was no difference in CTC and Twist (+) CTC counts according to tumor location, histologic grade, and TNM stage. Twist (+) CTCs were significantly associated with histologic grade; the frequency of Twist (+) CTCs increased as the histologic grade went worse. Other clinicopathologic characteristics such as sex, age, tumor location, tumor size and TNM stages were not significantly associated with Twist (+) CTCs.

Conclusions : Our study demonstrated that Twist (+) CTCs were detected in 3/4 of patients with ESCC and were associated with poorly differentiated histology.

Key words : Esophageal Neoplasms, Circulating Tumor Cell, Epithelial-Mesenchymal Transition

Table 3. Clinicopathologic characteristics of patients with esophageal squamous cell carcinoma according to the circulating tumor cells (CTCs), Twist (+) CTCs and the proportion of Twist (+) CTCs

	CTCs		*P* value	Twist (+) CTCs		*P* value	Proportion of Twist (+) CTCs		*P* value
	<2 (n = 8)	≥ 2 (n = 44)		Absent (n = 13)	Present (n = 39)		< 0.5 (n = 16)	≥ 0.5 (n = 36)	
Sex			0.375			0.731			0.921
Male	7	42		12	37		13	34	
Female	1	2		1	2		1	2	
Age			1.000			0.199			0.330
≤ 65 years	4	20		8	16		9	15	
> 65 years	4	24		5	23		7	21	
Location in the esophagus			0.323			0.749			0.430
Upper third	2	10		2	10		2	10	
Middle third	1	17		5	13		7	11	
Lower third	5	17		6	16		7	15	
Tumor size			0.108			0.108			0.356
≤ 3 cm	5	13		7	11		7	11	
> 3 cm	3	31		6	28		9	25	
Histologic grade			0.128			0.018			0.047
Well differentiated	3	5		5	3		5	3	
Moderately differentiated	5	34		8	31		11	28	
Poorly differentiated	0	5		0	5		0	5	
T stage			0.588			0.160			0.839
T1	3	12		5	10		5	10	
T2	1	6		2	5		2	5	
T3	1	16		1	16		4	13	
T4	3	10		5	8		5	8	
N stage			0.513			0.331			0.359
N0	4	14		7	11		7	11	
N1	0	9		1	8		1	8	
N2	2	10		3	9		5	7	
N3	2	11		2	11		3	10	
M stage			0.696			0.832			0.855
M0	7	36		11	32		13	30	
M1	1	8		2	7		3	6	
TMN stage			0.924			0.634			0.995
I	3	12		5	10		5	10	
II	1	6		2	5		2	5	
III	1	9		1	9		3	7	
IV	3	17		5	15		6	14	

CTCs, circulating tumor cells

Free Paper 2-2.

Tumour infiltrating lymphocytes assessed on haematoxylin eosin stained pre-treatment biopsies of oesophageal cancer patients predict benefit from chemotherapy - Results from the UK MRC OE02 trial

Maximilian Häller[1], Nina Šefčovičová[1], Shahab Jolani[2], Matthew Nankivell[3], William Allum[6], David Cunningham[4], Ruth Langley[3], Heike Grabsch[1,5]

[1]Pathology, Maastricht University Medical Center+, Maastricht, Netherlands, [2]Department of Methodology And Statistics, Maastricht University, Maastricht, Netherlands, [3]Mrc Clinical Trials Unit, University College London, London, UK, [4]Gastrointestinal And Lymphoma Unit, Royal Marsden Hospital, London, UK, [5]Pathology & Data Analytics, Leeds Institute of Medical Research At St James's, University of Leeds, Leeds, UK, [6]Surgery, Royal Marsden Hospital, London, UK

Purpose : Neoadjuvant chemotherapy (NAC) followed by surgery is one standard of care of patients with oesophageal cancer (OeC). Studies suggest that tumour infiltrating lymphocytes (TILs) can predict benefit from NAC. We explored the predictive and prognostic value of TILs measured in OeC patients recruited into the OE02 trial.

Methods : Haematoxylin/Eosin sections from pre-treatment endoscopic biopsies from 158 patients treated with surgery alone (S patients) and 147 patients treated with chemotherapy followed by surgery (CS patients) were digitized. Individual biopsy pieces were analysed by two observers quantifying %area TILs in the stroma (sTILs) and tumour cell compartment (tuTILs) separately according to proposed international guidelines. The relationship between lowest, highest and average TILs score/patient and compartment and clinicopathological parameters including overall survival and treatment interaction was investigated.

Results : Treatment interaction was only observed for the lowest tuTILs score/patient (interaction p=0.02). tuTILs were classified as high (>5%) versus low (≤5%) based on treatment interaction analysis results. CS patients with lowest tuTILs of ≤5% (n=74) survived longer than S patients (n=76), p=0.003. Survival of CS patients (n=60) and S patients (n=61) with lowest tuTILs >5% was similar (p=0.741). There was no relationship between lowest tuTILs score, histological phenotype (squamous carcinoma versus adenocarcinomca), gender, or age.

Conclusions : This is the first study suggesting that the extent of intratumourepithelial lymphocyte infiltration in HE stained pre-treatment biopsies from OeC patients can identify patients who are likely to benefit from NAC. Our findings represent an important step forward towards personalising treatment for OeC patients. Validation in independent patient cohorts is underway.

Key words : Oesophageal Cancer, Neoadjuvant Chemotherapy, Tumour Infiltrating Lymphocytes

Free Paper 2-3.

The effect of *Helicobacter pylori* infection and eradication on the tight junction in the gastric mucosal barrier

Sooin Choi[1], Nayoung Kim[1,2], Ji Hyun Park[2], Ryoung Hee Nam[1], Dong Ho Lee[1,2]

[1]Internal Medicine, Seoul National University Bundang Hospital, Seongnam, Korea, [2]Internal Medicine, Liver Research Institute, Seoul, Korea

Purpose : It is clear that *Helicobacter pylori* (HP) infection causes gastric cancer (GC) but the mechanism of carcinogenesis is not so clear. The aim of this study was to investigate the effect of HP infection on the tight junction of the gastric mucosal barrier which is constituent of GC microenvironments.

Methods : Non-tumorous gastric corpus tissues were obtained during gastroscopy at Seoul National University Bundang Hospital between 2006 to 2019. HP infection was confirmed with hematoxylin and eosin (H&E) stain, rapid urease test and screening specific IgG for HP using enzyme-linked immunosorbent assay (ELISA). To examine the expression level of tight junction proteins such as zonula occluden -1 (zo-1), Claudins (cldn1, cldn2) and occludin (ocln), total RNA was extracted and performed real-time quantitative polymerase chain reaction (RT-qPCR). To confirm the actual distribution of tight junction protein, immunohistochemistry (IHC) was performed.

Results : Total 510 patients (control n=284; cancer n=226) were included in this study. Among 158 control patients, 155 (54.6%) was HP–positive while GC group was HP–positive in 129 of 226 (57.1%). When gene expression of tight junction proteins was compared between HP-negative and -positive patients, all genes showed significant (Figure 1).

Table 1. The characteristics of patients

Total			N = 510	P-value
Control	**284**	**Cancer**	**226**	
Age	**51.5±12.6**	Age	**59.7±11.9**	[a]<0.0001
Male (%)	**137 (48.2)**	Male (%)	**150 (66.4)**	[b]<0.0001
Female (%)	**147 (51.8)**	Female (%)	**76 (33.6)**	
H. pylori		***H. pylori***		
Negative (%)	**129 (45.4)**	Negative (%)	**97 (42.9)**	[b]0.317
Positive (%)	**155 (54.6)**	Positive (%)	**129 (57.1)**	
		Early gastric cancer (EGC)	**152 (67.3)**	
		Advanced gastric cancer (AGC)	**74 (32.7)**	
		Intestinal type	**149 (65.9)**	
		Diffuse type	**72 (31.9)**	
		Well differentiated (W/D)	**86 (38.1)**	
		Moderate differentiated (M/D)	**62 (27.4)**	
		Poor differentiated (P/D)	**42 (18.6)**	
		Signet ring cell	**36 (15.9)**	

[a] Student T-test was performed
[b] Fisher exact test was performed

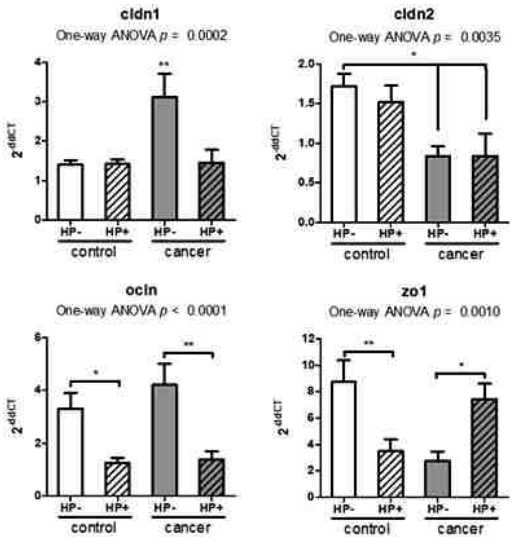


Figure 1. Tight junction protein gene expression change depends on *H. pylori* infection status

Especially zo-1 showed reversed pattern between control and cancer and gene expression of follow-up samples in HP-eradicated GC patients decreased statistically significantly which became similar to HP-negative. Such reversed expression of zo-1 was also founded at IHC results, except HP-eradicated patients.

Conclusions : The tight junction protein changed differently by HP-infection which indicates gastric mucosal microenvironment by carcinogenesis which could be reversible by HP-eradication.

Key words : *Helicobacter pylori*, Gastric Epithelial Cell, Tight Junction

Free Paper 2-4.

Alcian Blue - A rediscovered biomarker of poor prognosis in gastric cancer patients

Kelly Kerckhoffs[1], Drolaiz Liu[1], Lindsay Hewitt[1], Gregorio Fazzi[1], Heike Grabsch[1,2]

[1]Pathology, Maastricht University Medical Center+, Maastricht, Netherlands, [2]Pathology & Data Analytics, Leeds Institue of Medical Research At St. James's University of Leeds, Leeds, United Kingdom

Purpose : Gastric carcinoma (GC) is one of the major causes of cancer related deaths worldwide. GC mucin phenotype has been related to tumour invasion and genetic alterations. However, the relationship between mucin phenotype, clinicopathological variables and GC patient survival remains unclear.

Methods : Tissue microarrays from 709 GC resections were stained immunohistochemically for MUC2 (intestinal-type mucin) and MUC5AC (gastric-type mucin) and histochemically for Alcian Blue (AB) periodic acid-Schiff (PAS) (acidic and neutral mucin). Stainings were scored using a 10% cut off to define positivity. The relationship between marker, clinicopathological variables and survival was analysed.

Results : 16% GC were MUC2 positive, 36% MUC5AC positive, 6% AB positive, 3% PAS positive and 11% AB and PAS positive. 4% GC were triple positive, 49% triple negative. Expression of MUC2, MUC5AC and ABPAS staining was related to GC histology ($p<0.05$). AB positivity was related to deeper invasion ($p=0.006$) and poorer grade of differentiation ($p<0.001$). Patients with AB negative GC (n=543) survived significantly longer than those with AB positive GC (n=112), $p=0.001$. Survival of patients with PAS positive GC (n=20) was similar to those with AB negative GC. There was no relationship between MUC2 or MUC5AC and patient survival.

Conclusions : This is the first study to show that patients with AB positive GC are more likely to have locally very advanced disease, poorly differentiated GC and poorer survival. The underlying biological mechanisms related to the switch from PAS positive mucin in the normal gastric mucosa to acidic/intestinal type AB positive mucin in GC are currently unclear and warrant further investigations.

Key words : Gastric Cancer, Mucin, Survival

10:20-11:00

Free paper session 3

Chairs:

Ok-Jae Lee (Gyeongsang National University, Korea)

Hwoon-Yong Jung (University of Ulsan, Korea)

Free Paper 3-1.

Risk factors for lymph node metastasis and mortality after non-curative resection of undifferentiated early gastric cancer

Hyo-Joon Yang[1], Jae-Young Jang[2], Sang Gyun Kim [3], Ji Yong Ahn[4], Su Youn Nam[5], Jie-Hyun Kim[6], Byung-Hoon Min[7], Wan Sik Lee[8], Bong Eun Lee[9], Moon Kyung Joo[10], Jae Myung Park[11], Woon Geon Shin[12], Hang Lak Lee[13], Tae-Geun Gweon[14], Moo In Park[15], Jeongmin Choi[16], Chung Hyun Tae[17], Young-Il Kim[18], Il Ju Choi[18]

[1]Division of Gastroenterology, Department of Internal Medicine and Gastrointestinal Cancer Center, Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine, Seoul, Korea, [2]Department of Internal Medicine, College of Medicine, Kyung Hee University, Seoul, Korea, [3]Division of Gastroenterology, Department of Internal Medicine and Liver Research Institute, Seoul National University College of Medicine, Seoul, Korea, [4]Division of Gastroenterology, Department of Internal Medicine, University of Ulsan College of Medicine, Asan Medical Center, Seoul, Korea, [5]Gastroenterology, Kyungpook National University Hospital, School of Medicine, Kyungpook National University, Daegu, Kore, [6]Division of Gastroenterology, Department of Internal Medicine, Gangnam Severance Hospital, Yonsei University College of Medicine, Seoul, Korea, [7]Department of Medicine, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea, [8]Department of Internal Medicine, Chonnam National University Medical School, Gwangju, Korea, [9]Department of Internal Medicine, Pusan National University School of Medicine, Busan, Korea, [10]Department of Internal Medicine, Korea University College of Medicine, Seoul, Korea, [11]Department of Internal Medicine, Seoul St. Mary's Hospital, The Catholic University of Korea, Seoul, Korea, [12]Department of Internal Medicine, Hallym University College of Medicine, Seoul, Korea, [13]Division of Gastroenterology, Department of Internal Medicine, Hanyang University College of Medicine, Seoul, Korea, [14]Division of Gastroenterology, Department of Internal Medicine, Incheon St. Mary's Hospital, The Catholic University of Korea, College of Medicine, Incheon, Korea, [15]Department of Internal Medicine, Kosin University College of Medicine, Busan, Korea, [16]Department of Internal Medicine, Sanggye Paik Hospital, Inje University College of Medicine, Seoul, Korea, [17]Department of Internal Medicine, Ewha Womans University College of Medicine, Seoul, Korea, [18]Center for Gastric Cancer, National Cancer Center, Gyeonggi, Korea

Purpose : This study aimed to investigate risk factors for lymph node (LN) and distant metastasis and mortality after non-curative endoscopic resection (ER) of undifferentiated early gastric cancer (EGC).

Methods : Of 1124 patients who underwent ER for undifferentiated gastric cancer from 18 tertiary hospitals across six geographic areas in Korea between 2005 and 2014, 664 patients with non-curative ER beyond expanded criteria were retrospectively enrolled. According to the treatment after ER, they were divided into surgery group (n=270) and follow-up group (n=364). The median follow-up duration was 59 months for recurrence and 84 months for mortality.

Results : LN metastasis was found in 6.7% (18/270) of patients at surgery. Ulcer (odds ratio [OR], 3.83; 95% confidence interval [CI], 1.21-12.13; P=0.022) and either submucosal invasion (OR, 10.35; 95% CI, 1.35-79.48; P=0.025) or lymphovascular invasion (LVI) (OR, 2.95; 95% CI, 1.08-8.06; P=0.035) were independent risk factors. In the follow-up group, 7 patients (1.9%) developed LN or distant metastasis. Ulcer (hazard ratio [HR], 7.60; 95% CI, 1.39-35.74; P=0.018), LVI (HR, 6.80; 95% CI, 1.07-42.99; P=0.042), and deep RM involvement (HR, 6.71; 95% CI, 1.28-35.19; P=0.024) were independent risk factors. Deep RM involvement was independently associated with mortality in the follow-up group (HR, 3.80; 95% CI, 1.94-7.44; P<0.001) but not in the surgery group.

Conclusions : LVI, ulcer, submucosal invasion, and deep RM involvement were independently associated with LN or distant metastasis or mortality after non-curative ER of undifferentiated EGC. Surgical resection is strongly recommended for the patients with any of those risk factors.

Key words : Stomach Neoplasms, Undifferentiated Carcinoma, Lymph Node Metastasis

Free Paper 3-2.

Development of prediction model for gastric cancer using artificial intelligence based on the big data cohort and single nucleotide poylmorphism in Korea cohort

Chung Hyun Tae[1], Boram Jeong[2], Chang-Mo Moon[1], Donghwan Lee[2], Ki-Nam Shim[1], Hey-Kyung Jung[1]

[1]Department of Internal Medicine, Ewha Womans University College of Medicine, Seoul, Korea, [2]Department of Statistics, Ewha Womans University, Seoul, Korea

Purpose : Lifestyle and genetic factors are key drivers of individual-leveled gastric cancer. In spite of much evidence of lifestyle as the risk factor of gastric cancer, there were little known genetic factors. Here, we analyzed the data about lifestyle and genetic predisposition in prospective cohorts using artificial intelligence to construct the predictive model for gastric cancer.

Methods : We used the Korean Genome and Epidemiology Study data which is a prospective cohort study with community-based since 2005 including lifestyle and genetic SNPs. To improve the performance of predictive models, we applied the Synthetic Minority Oversampling Technique algorithm that balances the learning data class. The entire cohort was randomly assigned to training and test (validation) sets at a ratio of 7:3. A model for predicting gastric cancer was developed using RandomForest.

Results : The populations in the prospective cohort study were a total of 7,245 participants without gastric cancer at baseline for whom life study and genetic SNPs were available. During follow-up, 70 (about 1.0%) gastric cancer events were observed. The AUC (area under the ROC curve) for gastric cancer including only the lifestyle factor was 0.5839 (95% CI= 0.4592-0.7085). Besides, the AUC was higher when using only genetic factors (AUC 0.979, 95% CI= 0.9634-0.9945). The AUC increased highly with the addition of genetic predisposition on the lifestyle factor (AUC 0.984, 95% CI= 0.9639-1.0000).

Conclusions : These findings add new evidence that lifestyle and genetic susceptibility can lead to enabling better identification of predicting gastric cancer over that based on the lifestyle alone.

Key words : Gastric Cancer, Prediction Model, Genetic Predisposition

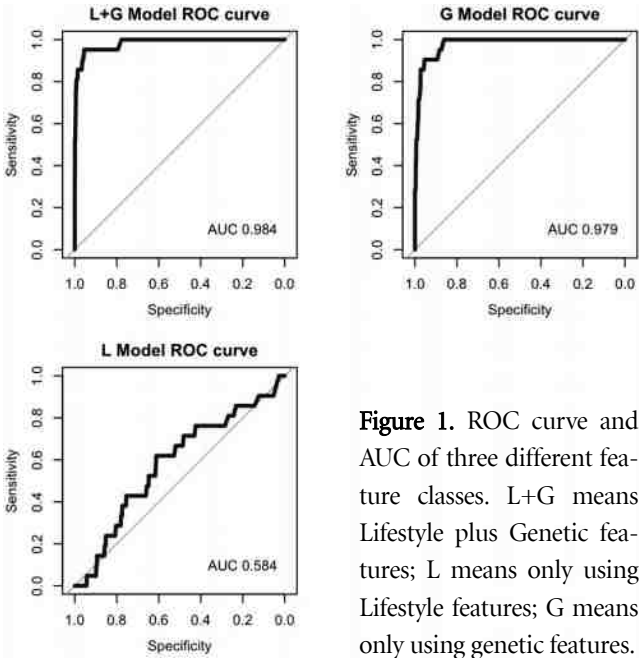


Figure 1. ROC curve and AUC of three different feature classes. L+G means Lifestyle plus Genetic features; L means only using Lifestyle features; G means only using genetic features.

Free Paper 3-3.

Infectious events after endoscopic procedures in hematologic patients with neutropenia

Ga-Yeong Shin, Kyung Han Song, Jae Myung Park, Yu Kyung Cho, Myung-Gyu Choi

Internal Medicine, The Catholic University of Korea, Seoul, Korea

Purpose : Neutropenia increase infectious risks. However, there are few studies that assessed post-endoscopic procedural infection risk in the patients with neutropenia. We assessed the infectious events (IEs) after endoscopic procedures in neutropenic patients with hematologic disease.

Methods : We studied consecutive hematology patients with neutropenia who underwent endoscopic procedures. Neutropenia was defined as an absolute neutrophil count (ANC) <1,500 cells/mL Procedures were classified into high, low-risk with/without biopsy. Primary outcome was IEs, which was defined as fever or bacteremia within 7 days after endoscopy. We assessed IE-risk factors after endoscopic procedures.

Results : We identified 479 patients who underwent 528 procedures. Mean age was 51.0 ± 13.9 years, and male comprised 56.8%. Antibiotics were used in 455 (95.0%) patients. IEs were observed in 154 (32.2%) patients: 38/174 (22.9%) in mild, 41/139 (29.5%) in moderate, and 75/166 (43.1%) in severe neutropenia. Fever developed in 147 (30.7%) patients. Bacteremia was observed in 22 (8.2%) of 271 patients who underwent blood culture after endoscopic procedures. In the univariate analysis, patients with myelodysplastic syndrome, poor performance status, severe neutropenia, history of stem cell transplants, no use of immunosuppressive drugs and no use of colony-stimulating factors were associated positively with IEs. In multivariate analysis, poor performance was the only factor associated with IEs (OR, 7.5; 95% CI, 3.4-16.6).

Conclusions : IEs were found in one thirds of neutropenic patients with hematologic diseases even after use of antibiotics. Patient performance status was the only risk factor for IEs. The invasive of procedure and the severity of neutropenia did not seem to affect the outcomes.

Key words : Neutropenia, Endoscopy, Safety

Free Paper 3-4.

Clinical outcomes of enteral feeding protocol via percutaneous endoscopic gastrostomy: A single center, retrospective study

Jin Hee Noh[1], Hee Kyong Na[1,2], Ji Yong Ahn[1], Suk-Kyung Hong[2], Jiyoun Kim[2], Jina Yang[2], Hwoon-Yong Jung[1]

[1]Gastroenterology, Asan Medical Center, Seoul, Korea, [2]Nutritional Support Team, Asan Medical Center, Seoul, Korea

Purpose : The development of the endoscopic technique has resulted in an increasing number of patients undergoing percutaneous endoscopic gastrostomy (PEG) insertion; however, the protocols for increasing the volume of feeding formula after PEG insertion have not been established. Therefore, we compared the clinical outcomes of patients receiving low- and high-volume increase in enteral feeding formula.

Methods : A total of 215 patients who underwent PEG insertion between January 2016 and March 2019 at Asan Medical Center, Seoul, Korea were included. They were divided into two groups according to the increase in volume of feeding formula: the low-volume group (n = 135) received <150 cc/day and the high-volume group (n = 80) received >300 cc/day. Patient characteristics, procedure, and feeding-related clinical outcomes were retrospectively reviewed using medical records.

Results : The adverse events of the feeding protocol did not significantly differ between the two groups. The number of days needed to attain the calorie targets was significantly lower in the high-volume than in the low-volume group (5.4 ± 3.0 vs. 2.4 ± 1.5, $p < 0.001$). The duration of supplementary parenteral nutrition and the length of hospitalization were also significantly lower in the high-volume group (3.9 ± 3.3 vs. 1.2 ± 2.2, $p < 0.001$ and 5.8 ± 2.7 vs. 4.6 ± 2.6, $p = 0.007$, respectively).

Conclusions : To rapidly attain the calorie targets in appropriately selected patients with PEG insertion, a high-volume increase in daily feeding can safely be recommended given the favorable outcomes.

Key words : Gastrostomy, Enteral Feeding, Complication

MEMO

11:50-13:10

Scientific session 4: Are we doing our best in the era of the resistant *H. pylori* prevailing?

Chairs:

Yong Chan Lee (Yousei University, Korea)

Jae Myung Park (The Catholic University of Korea, Korea)

Reconciliation of *H. pylori* guidelines in Western countries: First and second line regimens

Steven F. Moss

Brown University, Providence, RI, USA

CURRICULUM VITAE

Educational Background

Dr. Moss grew up in London, England, and graduated from University College London Medical School. He completed a gastroenterology fellowship at the Royal Postgraduate Medical School (Hammersmith Hospital) in London, and a second gastroenterology fellowship in New York, USA, at St. Luke's-Roosevelt Hospital (Columbia University).

Professional Career

After fellowship, Dr. Moss was appointed Assistant Professor of Medicine at Columbia University in New York in 1995. In 2000, he moved to Brown University in Providence, RI as an Associate Professor. In 2009, he was promoted to Professor of Medicine at Brown. He is the Program Director of the Gastroenterology Fellowship Training Program, works as a clinical gastroenterologist/endoscopist and performs research in *H. pylori* pathogenesis and therapy. He has received awards and research funding from the American Gastroenterology Association (Funderburg Gastrric Cancer award) and the US National Institutes of Health, served as a consultant to the WHO, and has been on the Editorial Boards of *Gastroenterology, Gut, American Journal of Gastroenterology and Helicobacter*. He is currently a councilor of the American Gastroenterology Association (EGD section). He is a member of the Royal College of Physicians (UK), an American Gastroenterology Association Fellow, and a Fellow of the American College of Gastroenterology.

Research Field

H. pylori pathogenesis
- Somatostatin/gastrin perturbation
- Apoptosis/cell cycle dysregulation
- Gastric carcinogenesis in cell culture and murine models

***H. pylori* therapy**
• Vaccine development
• Resistance testing

ABSTRACT

In the last few years expert groups from Europe, Canada and the United States, have coalesced around recommending bismuth quadruple therapy for first-line treatment, replacing clarithromycin-based triple therapy because of increasingly prevalent clarithromycin resistance (Figure). There is consensus for concomitant four-drug therapy as an alternative especially in countries where bismuth is not available, though concomitant therapy if a less attractive option in regions of high dual metronidazole, clarithromycin resistance. If the initial therapy is unsuccessful, this is likely due to resistance to clarithromycin, levofloxacin and/or metronidazole, and these drugs, if previously used, should be avoided in subsequent eradication attempts. The choice of second line therapy is between bismuth quadruple therapy (repeated if necessary) and levofloxacin triple therapy, depending on suspected resistance, which is guided by knowledge of local resistance patterns (if available) an d by a detailed drug history. Growing resistance to levofloxacin is of great concern in many regions (including USA); therefore rifabutin-based triple and high dose dual amoxicillin-proton pump inhibitor (PPI) therapy are under consideration for second line or subsequent treatment attempts.

It is apparent that 14 day treatments are more efficacious than shorter durations for all regimens (except perhaps rifabutin triple where 10 days may be sufficient), and that eradication success rates are better when using high doses of proton pump inhibitors. The more potent proton pump inhibitors esomeprazole and rabeprazole may have benefit over other PPIs due to less dependence on metabolism through the CYP2C19 pathway. Vonaprazan and other potassium-competitive acid blockers are not yet available in the West; results from their use in Western populations would be of considerable interest.

When using amoxicillin, three or four times daily dosing is advised over twice daily dosing to avoid low trough levels, especially in high dose dual therapy. Because resistance to amoxicillin, tetracycline, rifabutin and bismuth is rare or negligible, these remain important constituents of empiric therapies in Western countries. 10-20% of people in Western populations believe that they are allergic to penicillin, yet the vast majority of them (about 95%) are not allergic in actuality. Penicillin skin testing and controlled oral challenge and/or desensitization may be necessary in refractory *H. pylori* cases, to prove that the patient can tolerate penicillin without hypersensitivity.

It is appreciated that treatment recommendations and guideline development in Western countries are limited by the paucity of resistance data and recent clinical *H. pylori* eradication trials in many geographical areas, especially in North America. The pan-European registry is likely to be very helpful for *H. pylori* management but nothing similar to it exists or is planned in the USA or Canada.

Accessing laboratories performing *H. pylori* culture and sensitivity testing is not easy in many Western countries, so that sensitivity testing is not yet a part of routine *H. pylori* management, even after one or more treatment failures. However, this is beginning to change with the availability of molecular testing of gastric biopsies.

It may become much more widespread with the development of molecular assays based on stool, thus obviating the need for repeated upper endoscopy to access *H. pylori* DNA.

Finally, Western guidelines emphasize that it is important to confirm eradication with non-invasive testing in most cases since this may be clinically important for the individual patient; it is acknowledged that dyspeptic symptoms only weakly correlate with *H. pylori* presence. But just as important, measuring eradication success is essential for clinicians and health care services to evaluate the success of treatment in the patients served. Suboptimal success should prompt changes in empiric approaches, especially if resistance patterns in the population are unknown.

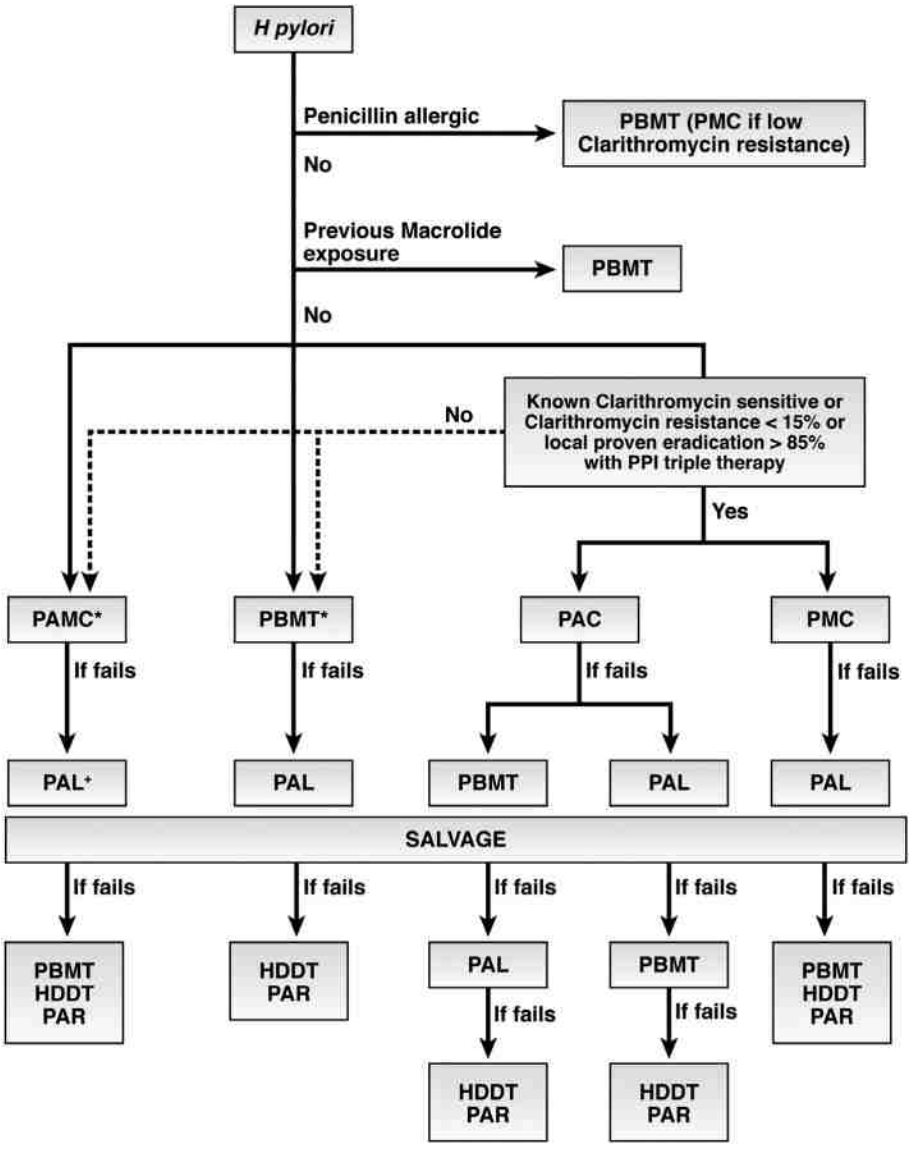


Figure. From: Fallone CA, Moss SF, Malfertheiner P. Reconciliation of recent *Helicobacter pylori* treatment guidelines in a time of increasing resistance to antibiotics. Gastroenterology 2019;157:44-53.

Reconciliation of *H. pylori* guidelines in Eastern countries: First and second line regimens

Mototsugu Kato

National Hospital Organization Hakodate National Hospital, Hakodate, Japan

CURRICULUM VITAE

Educational Background

March, 1982	Finished Hokkaido University School of Medicine. Received Degree of M. D.
December, 1996	Received Degree of Ph. D. in Hokkaido University School of Medicine

Professional Career

1982-1989	Resident in Third Department of Internal Medicine, Hokkaido University Hospital
1989-1994	Clinical Fellow
1994-1998	Instructor
1998-1999	Postdoctoral Fellow, Baylor College of Medicine, Tx, U.S.A.
1999-2007	Associate Professor, Division of Endoscopy, Hokkaido University Hospital
2007-2016	Chief Director, Division of Endoscopy, Hokkaido University Hospital
2010-2016	Clinical Professor, Division of Endoscopy, Hokkaido University Hospital
2016-Present	Hospital Director, National Hospital Organization Hakodate National Hospital

Research Field

President of Japanese Society of Helicobacter Research
Director of Japan Gastroenterological Endoscopy Society
Director of Japanese Gastroenterological Association
Director of Japanese Society of Neurogastroenterology and Motility

ABSTRACT

First-line and second-line regimens for *H. pylori* eradication were summarized according to *H. pylori* guidelines in eastern countries, especially China, Korea, and Japan. It is common that a regimen with an eradication rate of 90% or more by ITT analysis is recommended as first-line treatment in guideline. Current recommended regimens are usually different among each country and region. Such differences are due to differences in drugs approved by the governments and the national health insurance system and in the prevalence of resistant strains for antimicrobials used for eradication. Regarding drug approvals, bismuth citrate is not available in Japan and bismuth quadruple therapy is impossible to be used. On the other hand, vonoprazan (VPZ), one of the potassium-competitive acid blockers, which has stronger suppression of acid secretion than proton pump inhibitor (PPI), can be used as an alternative to PPI of standard triple therapy in Japan. Increased use of clarithromycin and metronidazole for various infections since childhood has resulted in increasing drug resistance and decreasing in *H. pylori* eradication rate by standard triple therapy using clarithromycin or metronidazole. There are many differences in rates of antimicrobial resistance among each country, and even the same country varies by region.

The Fifth National Consensus Conference report on the management of *H. pylori* infection organized by Chinese Society of Gastroenterology and Chinese Study Group on *Helicobacter pylori* and Peptic Ulcer was published in 2018. Currently, bismuth- containing quadruple therapy (PPI + bismuth + 2 antibiotics) is recommended as the main empirical therapy for *H. pylori* eradication. The recommended duration of bismuth quadruple therapy is 10 or 14 days, while the 7-day protocol should be abandoned. There are seven forms of the composition of these antimicrobial drugs: (i) amoxicillin + clarithromycin; (ii) amoxicillin + levofloxacin; (iii) amoxicillin + furazolidone; (iv) tetracycline + metronidazole; (v) tetracycline + furazolidone; (vi) amoxicillin + metronidazole; (vii) amoxicillin + tetracycline. In general, eradication regimens are not divided into first line, second line, or third line (except levofloxacin- containing regimen). The most efficient regimen should be chosen as initial therapy as much as possible. After the failure of initial treatment, the regimen of rescue therapy can be selected among the remaining regimens. The choice of regimens should be based on the local *H. pylori* antibiotic resistance and history of personal medications.

Guidelines for the diagnosis and treatment of *Helicobacter pylori* infection in Korea, 2013 revised edition was reported. Korean College of *Helicobacter* and Upper Gastrointestinal Research is currently revising new guidelines. Triple therapy including a standard dose of PPI, 1 g of amoxicillin and 500 mg clarithromycin twice a day for 7–14 days is the recommended as first-line regimen for *H. pylori* eradication. Quadruple therapy including two standard doses of PPI, three doses of 500 mg metronidazole, four doses of 120 mg bismuth, and four doses of 500 mg tetracycline daily for 7–14 days is the recommended alternative primary regimen for *H. pylori* eradication when clarithromycin resistance is suspected. Bismuth-containing quadruple therapy is recommended as the secondary regimen for *H. pylori* eradication in cases of eradication failure with the conventional triple therapy. A secondary regimen including two or more antibiotics that were not used in the primary regimen is recommended for *H. pylori* eradication in cases of eradication failure with initial bismuth-containing quadruple therapy.

The Japanese Society for Helicobacter Research reported guidelines for the Management of *H. pylori* Infection in Japan: 2016 revised edition. The standard regimens of first-line and second-line eradication for *H.*

pylori is 7-day triple therapy with a PPI or a P-CAB combined with amoxicillin and clarithromycin or metronidazole. Antimicrobials for first-line eradication therapy should be chosen on the basis of antimicrobial-susceptibility tests and used in a combination expected to achieve the highest eradiation rate. If the susceptibility test is not performed, the triple PPI or P-CAB-based triple therapy with amoxicillin and metronidazole should be chosen, because the combination of amoxicillin and metronidazole demonstrated a significantly higher eradication rate than combination of amoxicillin and clarithromycin in a primary eradication study. Salvage therapies following second-line eradication therapy include eradication using sitafloxacin and high-dose PPI/AMPC therapy. The situation in Japan is very different from other countries at the point of the possible use of vonoprazan. Although no differences were observed in a study comparing omeprazole, lansoprazole, and rabeprazole, the eradication rate with VPZ has been reported to be significantly higher than that with PPIs. In patients with clarithromycin resistant strain, vonoprazan-based triple therapy with amoxicillin and clarithromycin can achieve 80% eradication rate.

As the situation of new approval drugs and antimicrobials resistance will change in the future, guideline for *H. pylori* eradication treatment need revised in each country.

References

1. Liu WZ, Xie Y, Lu H, et al. Fifth Chinese National Consensus Report on the management of *Helicobacter pylori* infection. Helicobacter 2018r;23:e12475.
2. Kim SG, Jung HK, Lee HL, et al. Guidelines for the diagnosis and treatment of *Helicobacter pylori* infection in Korea, 2013 revised edition. J Gastroenterol Hepatol 2014;29:1371-1386.
3. Kato M, Ota H, Okuda M, et al. Guidelines for the management of *Helicobacter pylori* infection in Japan: 2016 Revised Edition. Helicobacter 2019;24:e12597.

Profiling the resistance: Genotyping based

Byung-Wook Kim

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CURRICULUM VITAE

Educational Background

MD The Catholic University of Korea (1990)
PhD The Catholic University of Korea (2001)

Professional Career

Professor of Medicine – Incheon St. Mary's Hospital, The Catholic University of Korea (2012~)
Research Vice President, Incheon St. Mary's Hospital, The Catholic University of Korea (2019~)
Director of the Scientific Committee, Korean College of Helicobacter and Upper Gastrointestinal Research (2016-2018)
Director of the Publication Committee, Korean College of Helicobacter and Upper Gastrointestinal Research (2012-2014)
Director of Guideline Committee, Korean Society of Gastroenterology (2017-2019)
Director of Conscious Sedation Committee, Korean Society of Gastrointestinal Endoscopy (2019~)

Research Field

Gastric cancer
H. pylori & peptic ulcer disease
Therapeutic endoscopy

ABSTRACT

The eradication rate of triple therapy for *Helicobacter pylori* (*H. pylori*) has been declining for the past decades world-widely.[1,2] Resistance to antibiotics, especially macrolide drugs such as clarithromycin is the most important factor responsible for the failure of *H. pylori* eradication.[3,4] To avoid resistance, culture and standard susceptibility tests are mandatory. However, the slow growth and particular conditions required for *H. pylori* growth makes culture a significant challenge.[5]

It is well known that resistance to clarithromycin in *H. pylori* is mostly due to point mutations in the peptidyl transferase-encoding region of the 23S rRNA gene. Point mutations result in a decrease in affinity between ribosomes and clarithromycin so that the drug is unable to interrupt protein synthesis.[6] Mutations A2143G and A2142G/C are most commonly associated with clarithromycin resistance in natural *H. pylori* strains in Asia,[7,8] Europe,[9,10] North and South America[11,12] and Africa,[13] whilst A2144G is also prevalent in some countries of Asia[14] and North America.[11] In addition, other 23S rRNA gene mutations, such as T2289C, C2245T, G2224A, T2182, T2717C and T2243C, have been reported occasionally in clarithromycin-resistant *H. pylori* isolates.[15-18]

Molecular tests for detecting clarithromycin resistance in *H. pylori* are based on detection of mutations in the 23S rRNA gene. Various assays have been developed to detect clarithromycin resistance in *H. pylori* isolates both in gastric biopsy samples and feces. Among the assays, polymerase chain reaction (PCR)-based assay is the most commonly used method. PCR-based assays such as restriction fragment length polymorphism (RFLP), 3'-mismatch PCR, DNA sequencing, DNA chips, real-time PCR, and PCR line probe assay (PCR-LiPA) have been introduced.[19] Non-PCR based method such as fluorescence *in situ* hybridization (FISH) has been introduced.[20]

Currently, all of the techniques described above highlight the fact that molecular methods can rapidly and accurately determine clarithromycin resistance in *H. pylori*. Most of these methods showed an excellent sensitivity and specificity. However, several factors limit their clinical application, include fastidious, time-consuming preparation and low-throughput as well as carrying a risk of contamination. To establish an optimal tailored therapy, benefits and limitations of each methods should be clearly elucidated with further studies.

References

1. Megraud F, Coenen S, Versporten A, et al. *Helicobacter pylori* resistance to antibiotics in Europe and its relationship to antibiotic consumption. Gut 2013;62:34-42.
2. Shin WG, Lee SW, Baik GH, et al. Eradication rates of *Helicobacter pylori* in Korea over the past 10 years and correlation of the amount of antibiotics use: nationwide survey. Helicobacter 2016;21:266-278.
3. Megraud F, Lamouliatte H. Review article: the treatment of refractory *Helicobacter pylori* infection. Aliment Pharmacol Ther 2003;17:1333-1343.
4. Koletzko S, Richy F, Bontems P, et al. Prospective multicentre study on antibiotic resistance of *Helicobacter pylori* strains obtained from children living in Europe. Gut 2006;55:1711-1716.
5. Hirschl AM, Makristathis A. Methods to detect *Helicobacter pylori*: from culture to molecular biology. Helicobacter 2007;12:6-11.
6. Vester B, Douthwaite S. Macrolide resistance conferred by base substitutions in 23S rRNA. Antimicrob Agents Chemother 2001;45:1-12.

7. Kim T, Song HJ, Shin SY, et al. Clarithromycin-resistant *Helicobacter pylori* associated with 23S rRNA point mutations in Jeju Island. Korean J Gastroenterol 2013;61:252-258.
8. Xuan SH, Zhou YG, Shao B, et al. Enzymic colorimetry-based DNA chip: a rapid and accurate assay for detecting mutations for clarithromycin resistance in the 23S rRNA gene of *Helicobacter pylori*. J Med Microbiol 2009;58:1443-1448.
9. Monno R, Giorgio F, Carmine P, Soleo L, Cinquepalmi V, Ierardi E. *Helicobacter pylori* clarithromycin resistance detected by E-test and TaqMan real-time polymerase chain reaction: a comparative study. APMIS 2012;120:712-717.
10. Francavilla R, Lionetti E, Castellaneta S, et al. Clarithromycin-resistant genotypes and eradication of *Helicobacter pylori*. J Pediatr 2010;157:228-232.
11. Versalovic J, Osato MS, Spakovsky K, et al. Point mutations in the 23S rRNA gene of *Helicobacter pylori* associated with different levels of clarithromycin resistance. J Antimicrob Chemother 1997;40:283-286.
12. Garcia GT, Aranda KR, Gonc¸alves ME, et al. High prevalence of clarithromycin resistance and *cagA, vacA, iceA2,* and *babA2* genotypes of *Helicobacter pylori* in Brazilian children. J Clin Microbiol 2010;48:4266-4268.
13. Ben Mansour K, Burucoa C, Zribi M, et al. Primary resistance to clarithromycin, metronidazole and amoxicillin of *Helicobacter pylori* isolated from Tunisian patients with peptic ulcers and gastritis: a prospective multicentre study. Ann Clin Microbiol Antimicrob 2010;9:22.
14. Song HJ, Chung IS, Kim BW, et al. Antimicrobial resistance rates in *Helicobacter pylori* and detection of 23S rRNA mutation associated with clarithromycin resistance. Korean J Gastroenterol 2000;36:597-606.
15. Hao Q, Li Y, Zhang ZJ, Liu Y, Gao H. New mutation points in 23S rRNA gene associated with *Helicobacter pylori* resistance to clarithromycin in northeast China. World J Gastroenterol 2004;10:1075-1077.
16. Khan R, Nahar S, Sultana J, Ahmad MM, Rahman M. T2182C mutation in 23S rRNA is associated with clarithromycin resistance in *Helicobacter pylori* isolates obtained in Bangladesh. Antimicrob Agents Chemother 2004;48:3567-3569.
17. Fontana C, Favaro M, Minelli S, et al. New site of modification of 23S rRNA associated with clarithromycin resistance of *Helicobacter pylori* clinical isolates. Antimicrob Agents Chemother 2002;46: 3765-3769.
18. Khademi F, Faghri J, Moghim S, et al. The study of mutation in 23S rRNA resistance gene of *Helicobacter pylori* to clarithromycin in patients with gastrointestinal disorders in Isfahan - Iran. Adv Biomed Res 2014;3:98.
19. Xuan SH, Wu LP, Zhou YG, Xiao MB. Detection of clarithromycin-resistant *Helicobacter pylori* in clinical specimens by molecular methods: a review. J Glob Antimicrob Resist 2016;4:35-41.
20. Morris JM, Reasonover AL, Bruce MG, et al. Evaluation of seaFAST, a rapid fluorescent *in situ* hybridization test, for detection of *Helicobacter pylori* and resistance to clarithromycin in paraffin-embedded biopsy sections. J Clin Microbiol 2005;43:3494-3496.

13:10-14:10

Luncheon Symposium 2. Patients centered approach to management of upper GI diseases focused on PPI

Chairs:

Jae Gyu Kim (Chung-Ang University, Korea)

Sun Moon Kim (Konyang University, Korea)

Patients centered approach to management of upper GI diseases focused on PPI

Jun Haeng Lee

Department of Medicine, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea

CURRICULUM VITAE

Educaiton

March 1986-February 1992	B.A. Seoul National University College of Medicine, Seoul, Korea
March 2000-February 2002	Master course, Seoul National University, College of Medicine Graduate School, Seoul, Korea
March 2003-February 2005	Doctorial course, Seoul National University, College of Medicine Graduate School, Seoul, Korea

Postgraduate training

March 1992-February 1993	Internship, Seoul National University Hospital, Seoul, Korea
March 1993-February 1997	Resident, Internal Medicine, Seoul National University Hospital, Seoul, Korea
May 2000-February 2002	Clinical and Research Fellowship, Department of Medicine, Samsung Medical Center, Seoul, Korea
June 2004-July 2004	Visiting investigator, National Cancer Center Hospital, Tokyo, Japan
August 2006-January 2008	Visiting investigator, Fred Hutchinson Cancer Research Center, Seattle, USA

Hospital appointment

April 1997-March1998	Director of Department of Internal Medicine, Medical battalion, First division of Korean Marine Corps, Pohang, Korea
April 1998-April 2000	Director of Department of Internal Medicine and Gastroenterology, Armed Forces Seoul Hospital, Seoul, Korea
May 2002-November 2002	Gastroenterologist, Department of Medicine, Kangbuk Samsung Hospital, Seoul Korea
January 2003-February 2003	Clinical Assistant Professor, Department of Medicine, Samsung Medical

	Center, Seoul, Korea
March 2003-March 2007	Assistant Professor, Department of Medicine, Sungkyunkwan University School of Medicine, Samsung Medical Center, Seoul, Korea
April 2007-March 2013	Associate Professor, Department of Medicine, Sungkyunkwan University School of Medicine, Samsung Medical Center, Seoul, Korea
April 2013-present	Professor, Department of Medicine, Sungkyunkwan University School of Medicine, Samsung Medical Center, Seoul, Korea

Areas of interest

Endoscopic treatment of early gastric cancer
Diagnosis and treatment of gastroesophageal reflux disease
Gastric cancer screening
Use of IT (information technology) in medicine (personal homepage: http://endotoday.com)
Quality and patient safety in medicine

MEMO

14:10-15:30

Scientific session 5: Chemopreventive strategies in upper GI cancer

Chairs:

Jong-Jae Park (Korea University, Korea)

Su Jin Hong (Soon Chun Hyang University, Korea)

Effect on *H. pylori* eradication therapy against gastric cancer

Hidekazu Suzuki

Professor and Chairman, Division of Gastroenterology and Hepatology,
Department of Internal Medicine, Tokai University School of Medicine, Japan

CURRICULUM VITAE

Educational Background

1983-1995	Keio University, Premedical Course, Tokyo, Japan.
1985-1989	Keio University School of Medicine, Tokyo, Japan (M.D. June, 1989)
1989-1993	Keio University, Postgraduate Course of Medicine, Tokyo, Japan
1994	Ph.D.; Thesis: Suzuki, H. "Paradoxical oxidative cell injury in hypoperfused rat liver. -Beneficial effects of prostaglandin E1-"
1993-1995	Postdoctoral Research Fellow, Institute for Biomedical Engineering, University of California at San Diego, La Jolla, California, U.S.A.

Professional Career

1995-2003	Instructor, Department of Internal Medicine, Keio University School of Medicine, Tokyo, Japan
2003-2005	Visiting fellow, Yamagata Technopolis foundation BioRadical Institute
2003-2016	Visiting Assistant Professor, Department of Internal Medicine, Tokyo Dental College
2003-2011	Assistant Professor, Department of Internal Medicine, Keio University School of Medicine
2005-2005	Head, Department of Gastroenterology, Kitasato Institute Hospital
2007-2015	Head of Outpatient Clinic, Division of Gastroenterology and Hepatology, Keio University Hospital
2011-2015	Associate Professor, Department of Internal Medicine, Keio University School of Medicine
2012	Visiting Professor, Department of Gastroenterology and Hepatology, University of Washington Medical Center
2012-present	Asian Neurogastroenterology and Motility Association (ANMA) Governing Council member
2013-2015	Vice director, Division of Gastroenterology and Hepatology, Keio University Hospital
2013-2015	Vice education chief, Keio University School of Medicine

2013-present	Review board member of Grants-in-Aid for Scientific Research of JSPS
2015-2019	Professor, Medical Education Center, Keio University School of Medicine
2015-2019	Professor, Keio University Graduate School of Medicine (Gastroenterology, Hepatology, Medical Education)
2016-present	President of the Japanese Society for Microcirculation
2016-present	Visiting Professor, Department of Internal Medicine, Tokyo Dental College
2016-present	Standing committee member of Japanese Medical Specialty Board
2017-present	International Committee member of American Gastroenterological Association (AGA)
2017-present	Vice President of the Japanese Society for Helicobacter Research (JSHR)
2017-present	Chief, Fellowship Training Center, Keio Univeristy School of Medicine
2018-present	Steering Committee member of Japanese Medical Specialty Board
2019-present	Professor, Division of Gastroenterology and Hepatology, Department of Internal Medicine, Tokai University School of Medicine
2019-present	Director, Division of Postgraduate Clinical Training, Tokai University Hospital

Research Field

Upper Gastrointestinal diseases (esophagus/stomach/duodenum), *Helicobacter pylori* infection, Esophageal and Gastric Cancer, Peptic Ulcer, Functional Gastrointestinal disorders, Growth and Differentiation, Microcirculation, Free Radicals, microRNA, cancer stem cell biology, Medical specialist training, Clinical data analysis

ABSTRACT

Around 40 years after the first isolation culture of *Helicobacter pylori* (*H. pylori*), it has become clear now that this bacterium is involved not only in the onset and recurrence of gastroduodenal ulcers but also in the onset of chronic gastritis, non-cardiac gastric cancer, gastric MALT lymphoma, immune thrombocytopenic purpura (ITP) etc (1). Especially, the relationship with gastric cancer has received special attention. In addition to the *in vitro* results by *H. pylori* derived oncoprotein CagA (2, 3), the *in vivo* results by Mongolian gerbil's infection (4), a lot of knowledge accumulated also from epidemiological and clinical trials (5). Furthermore, whether gastric carcinogenesis could be prevented by *H. pylori* eradication therapy was confirmed by meta-analysis of many clinical trials or the interventional cohort study for the incidence of metachronous gastric cancer after endoscopic treatment of initial early gastric cancer, especilally reported from the East Asia (6, 7). However, it has also been found that the effect for gastric cancer prevention by the eradication is different depending on the degree of progression of atrophic gastritis (8), a premalignant lesion of gastric cancer, or the age at the time of eradication, and it can not be 100% preventable by eradication due to the progression of preneoplastic changes (9). At present, the appropriate follow-up interval according to the gastric cancer risk of gastric mucosa is not clear. Recently, the Japan Society for Helicobacter Research (JSHR) started a nationwide prospective study for *H. pylori* eradicated cases named Japan Registry for *H. pylori* Eradication (JRPE), which prospectively observes gas-

tric cancer onset after the eradication. Since the approval for natinoal insurance for *H. pylori* eradication to *H. pylori*-infected gastritis in 2013, its eradication therapy for all infected persons has been started in Japan (10). In order to effectively suppress all gastric cancers, we should set the appropriate eradication age, adequate surveillance interval, appropriate eradication regimen that does not generate resistant bacteria.

REFERENCES

1. Suzuki H, Hibi T, and Marshall BJ. *Helicobacter pylori*: present status and future prospects in Japan. *J Gastroenterol.* 2007;42(1):1-15.
2. Tsugawa H, Suzuki H, Saya H, Hatakeyama M, Hirayama T, Hirata K, Nagano O, Matsuzaki J, and Hibi T. Reactive oxygen species-induced autophagic degradation of *Helicobacter pylori* CagA is specifically suppressed in cancer stem-like cells. *Cell Host Microbe.* 2012;12(6):764-77.
3. Tsugawa H, Mori H, Matsuzaki J, Sato A, Saito Y, Imoto M, Suematsu M, and Suzuki H. CAPZA1 determines the risk of gastric carcinogenesis by inhibiting *Helicobacter pylori* CagA-degraded autophagy. *Autophagy.* 2018:1-17.
4. Suzuki H, Masaoka T, Hosoda H, Ota T, Minegishi Y, Nomura S, Kangawa K, and Ishii H. *Helicobacter pylori* infection modifies gastric and plasma ghrelin dynamics in Mongolian gerbils. *Gut.* 2004;53(2):187-94.
5. Suzuki H, and Mori H. World trends for *H. pylori* eradication therapy and gastric cancer prevention strategy by *H. pylori* test-and-treat. *J Gastroenterol.* 2018;53(3):354-61.
6. Fukase K, Kato M, Kikuchi S, Inoue K, Uemura N, Okamoto S, Terao S, Amagai K, Hayashi S, and Asaka M. Effect of eradication of *Helicobacter pylori* on incidence of metachronous gastric carcinoma after endoscopic resection of early gastric cancer: an open-label, randomised controlled trial. *Lancet.* 2008;372(9636):392-7.
7. Choi IJ, Kim YI, and Park B. *Helicobacter pylori* and prevention of gastric cancer. *N Engl J Med.* 2018;378(23):2244-5.
8. Suzuki H, and Matsuzaki J. Gastric cancer: evidence boosts *Helicobacter pylori* eradication. *Nat Rev Gastroenterol Hepatol.* 2018;15(8):458-60.
9. Hirata K, Suzuki H, Imaeda H, Matsuzaki J, Tsugawa H, Nagano O, Asakura K, Saya H, and Hibi T. CD44 variant 9 expression in primary early gastric cancer as a predictive marker for recurrence. *Br J Cancer.* 2013;109(2):379-86.
10. Tsuda M, Asaka M, Kato M, Matsushima R, Fujimori K, Akino K, Kikuchi S, Lin Y, and Sakamoto N. Effect on *Helicobacter pylori* eradication therapy against gastric cancer in Japan. *Helicobacter.* 2017;22(5).

Metformin use and gastric cancer risk

Wai K. Leung

Department of Medicine, University of Hong Kong, Hong Kong

CURRICULUM VITAE

Educational Background

1991 MBChB, Faculty of Medicine, Chinese University of Hong Kong
2001 MD (with commendation), Faculty of Medicine, Chinese University of Hong Kong

Professional Career

Associate Dean (Human Capital), LKS Faculty of Medicine, University of Hong Kong
Li Shu Fan Medical Foundation Professor in Gastroenterology, University of Hong Kong
Co-Director, Integrated Endoscopy Center, Queen Mary Hospital, Hong Kong

Research Field

Helicobacter pylori and gastric cancer prevention
Epidemiology of gastrointestinal bleeding
Novel endoscopic technology
Inflammatory bowel disease

ABSTRACT

Gastric cancer is the fifth most common cancer and third leading cause of cancer-related death worldwide. *Helicobacter pylori* infection is the most important risk factor for gastric cancer which increases the risk of gastric cancer by at least three-fold. Despite *H. pylori* eradication, the risk of gastric cancer can only be reduced by about 40% as shown in a recent meta-analysis. In addition to *H. pylori*, diabetes mellitus (DM) has been linked to gastric cancer development. As yet, previous studies that examined the association between gastric cancer and DM are largely confounded by the *H. pylori* statuses.

Based on the population electronic health care database of the Hong Kong Hospital Authority, we have included all adult patients, aged 45 or above, who had received clarithromycin-based triple therapy for *H. pylori* between 2003 and 2012 [1]. All patients were observed from *H. pylori* therapy prescription until gastric cancer diagnosis, death, or end of study (December 2015). With a median follow up of 7 years, 0.33% of the 46,460 *H. pylori* eradicated patients developed gastric cancer [2]. Type II DM was associated with an increased gastric cancer risk (adjusted HR [aHR]:1.73; 95% CI:1.08–2.79). Stratified analysis showed increase in risk for cardia cancer only (aHR:3.40, 95% CI:1.45–7.97) and particularly those with suboptimal DM control (time-weighted average HbA1c ≥6.0%; aHR:1.68, 95% CI:1.07–2.63).

In the analysis of 7,266 DM patients who had received *H. pylori* eradication [3], we showed that the use of metformin was associated with a reduced gastric cancer risk (aHR = 0.49, 95% CI: 0.24-0.98). There was a trend towards a lower gastric cancer risk with increasing duration (P-trend = 0.01) and dose of metformin (P-trend = 0.02). Patients who used metformin for 3 or more years had the lower risk of gastric cancer (HR 0.35, 95% CI: 0.16-0.80). The use of insulin however was not associated with risk of gastric cancer.

In conclusion, we found that DM increased the risk of gastric cancer even after eradication of *H. pylori.* The use of metformin was associated with lower gastric cancer risk among DM patients who had *H. pylori* eradicated.

References:

1. Leung WK, Wong IOL, Cheung KS, Yeung KF, Chan EW, Wong AYS, Chen L, Wong ICK, Graham DY. Effects of *Helicobacter pylori* treatment on incidence of gastric cancer in older individuals. Gastroenterology 2018;155:67-75.
2. Cheung KS, Chan EW, Chen L, Seto WK, Wong ICK, Leung WK. Diabetes increases risk of gastric cancer after *Helicobacter pylori* eradication: a territory-wide study with propensity score analysis Care 2019;42:1769-1775.
3. Cheung KS, Chan EW, Wong AYS, Chen L, Seto WK, Wong ICK, Leung WK. Metformin use and gastric cancer risk in diabetic patients after *Helicobacter pylori* eradication J Natl Cancer Inst 2019;111:484-489.

Chemopreventive effect of aspirin against gastric cancer

Il Ju Choi

Center for Gastric Cancer, National Cancer Center, Korea

CURRICULUM VITAE

Educational Background

1990	Seoul National University College of Medicine, Seoul, Korea M.D
1991-1995	Residency training in Internal Medicine, Seoul National University Hospital
2001	Seoul National University; Graduate School; Seoul, Korea; PhD. of Medical Science

Professional Career

2001-present	National Cancer Center, Center for Gastric Cancer, Staff physician
2014-present	Adjunct Professor Department of Cancer Control and Policy, Graduate school of Cancer Science and Population Health, National Cancer Center
2011-2019	Deputy and associated editor, Clinical Endoscopy
2014-2018	Head of research affair, Korean College of Upper Gastrointestinal Disease and Helicobacter Research

Research Field

H. pylori infection and gastric cancer – pathogenesis and prevention RCTs
Gastric cancer screening and prevention
Endoscopic treatment of early gastric cancer

ABSTRACT

Aspirin is used as an anti-platelet drug for the primary or secondary prevention of cardiovascular or cerebrovascular events. Aspirin has been investigated as an anti-cancer drug because of the association with the reduction of colorectal cancer risk. Chronic inflammation plays an important role in development of gastric cancer, and several studies have reported the association between *H. pylori* infection and gastric cancer risk.

Case-control studies reported significant association of aspirin use with a reduction in gastric cancer risk, with odds ratios (OR) ranging from 0.3 to 0.7. However, cohort studies have reported inconsistent results in the risk reduction of gastric cancer. We previously investigated the association between long-term, low-dose aspirin use and gastric cancer incidence using data from the Korean National Health Insurance (KNHI) claim database of patients with hypertension or type 2 diabetes using. In matched cohort, the incidence rates of gastric cancer were 0.8% (31/3,907) for regular aspirin users and 1.1% (86/7,808) for aspirin non-users. Regular aspirin users had a reduced risk of gastric cancer and duration of aspirin use showed significant association with reduction of gastric cancer risk particularly in patients who used aspirin for more than 3 years (adjusted HR, 0.40; 95% CI, 0.16 to 0.98; P=0.045).

Patients with gastric cancer usually have advanced precancerous changes in remnant gastric mucosa and a high risk for the metachronous gastric cancer development. In a randomized study we showed that during a median follow-up of 5.9 years, metachronous gastric cancer developed in 14 patients (7.2%) in the treatment group and in 27 patients (13.4%) in the placebo group (HR in the treatment group, 0.50; 95% CI, 0.26 to 0.94; P = 0.03). This results showed that the patients still have a high risk for gastric cancer development even after *H. pylori* treatment. To evaluate the effect of aspirin use on gastric cancer risk, we designed an RCT which will evaluate the risk reduction of metachronous gastric cancer after endoscopic resection of the disease. We will recruit 1,700 early gastric cancer patients who were treated by ESD and will randomly assign them to either aspirin treatment group or placebo group. Aspirin group will take a 100 mg aspirin daily for 5 years. This study will be performed as a multi-center study in Korea. Recruitment will continue for 3 years and the participants will be followed through 5 years from the time of last participant's enrollment. The assumptions for this study are that 1) metachronous gastric cancer risk is 1.7% per year, 2) HR for aspirin group is 0.60, 3) alpha error of 0.05 and statistical power of 80% are expected, and 4) follow-up loss is about 15%. Through this study, we can show whether low-dose aspirin intake is a promising strategy for gastric cancer prevention or not.

15:50-17:10

Scientific session 6: KCHUGR-VFDE Joint Symposium

Chairs:

Jae Gyu Kim (Chung-Ang University, Korea)

Sung Kwan Shin (Yonsei University, Korea)

Diagnosis and treatment of *H. pylori* infection in Vietnamese children: What are the differences between adults and children?

Vu Van Khien[1], Pham Hong Khanh[3], Doan Vu Nam[3], Nguyen Thi Viet Ha[4], Dang Thuy Ha[4], Nguyen Thi Ut[4], Tran Huyen Trang[2], Ho Dang Quy Dung[5], Yoshio Yamaoka[5]

Dept. of GI Endoscopy, 108 Central Hospital –Hanoi -Vietnam[1], Dept. of Biology, 108 Centyral Hospital- Hanoi –Vietnam[2], Dept. of Gastroentyerology, 103 Hospital, Hanoi-Vietnam[3], Dept. of Gastroenterology, Vietnam National Children's Hospital-Vietnam[4], Dept. of GI Endoscopy, Choray Hospital –Hanoi –Vietnam[5], Dept. of Environmental & Preventive Mesicine, Oita University Faculty of Medince,Japan[6]

CURRICULUM VITAE

Educational Background

September 1983 to August 1989 M.D, Military Medical Academy, Hanoi -Vietnam
September 1995 to August 2000 Ph.D. Military medical Academy, Hanoi- Vietnam

Professional Career

09/1989- 09/1992	Internship, Hanoi Medical University, Hanoi City, Vietnam
05/2001-06/2001	Fellowship in Gastroenterology, Chiangmai University, Chiangmai City, Thailand
06/2002-08/2003	Fellowship in Gastroenterology, Okyama University, Okayama City, Japan
04/2002-06/2004	Fellowship in Gastroenterology, Michigan University, Michigan City, USA
September 2009- present	Associate Professor, Hanoi Medical University & Military Medical Academy

Award of Young Investigator

10th Asian Pacific Congress of Gastroenterology (APCGE) and 7th Asian Pacific Congress of Digestive Endoscopy (APCDE), Yokohama – Japan (September/ 1996)

The Alimentary Disease Week (ADW), Manila - Philippines (November/ 1998).

11st Asian Pacific Congress of Gastroenterology (APCGE) and 8th Asian Pacific Congress of Digestive Endoscopy (APCDE), Hongkong – China (March/2000)

Research Field

His interests include *H. pylori,* GERD, ISB, IBD, gastrointestinal cancers screening and advanced therapeutics endoscopy

ABSTRACT

Introduction & Aims

Helicobacter pylori (H. pylori) was introduced in 1982, by Warren and Marshall, in cases with chronic gastritis and peptic ulcers. In 1994, the World Health Organization (WHO) considered *H. pylori* as a causative agent for gastric cancer. More than half of the world's population have *H. pylori* infection, without any signs or symptoms. *H. pylori* is common in the developing countries of Africa, South America and Asia. Vietnam is located in the Asia Pacific with a high prevalence of *H. pylori* in the community Việt Nam. Recent studies showed that drug resistance of *H. pylori* is increasing. In this article, we update the rate of *H. pylori* infection, the method of diagnosis and drug resistance of *H. pylori* status between children and adults in Vietnam.

Methods

A systematic review of the literature (time period: 2008-2018) was performed. The data were summarized in an extraction table and analyzed manually. Finally, Excel 2007 software was used to create charts

Results

Prevalence of *H. pylori* infection: Prevalence of *H. pylori* increases in the city compared to the high mountains, Central Highlands and Mekong Delta (74.6% versus with: 44.7%; 45.2% and 42.6%; respectively). ($p < 0.001$). Prevalence of *H. pylori* in adults has been higher in adults than children in all regions: In the city, *H. pylori* seroprevalence was 584/747 (78.2%) in adults versus 140/224 (62.5%) in children ≤ 18 years old ($p = 0.0001$); In high mountainous (North - Vietnam): *H. pylori* seroprevalence was 1077/2250 (47.8%) in adults versus 745/1757 (42.4%) in children ≤ 18 years old ($p < 0.05$). In central highlands (Central-Vietnam): *H. pylori* seroprevalence was 413/780 (52.9%) in adults versus 476/1188 (40.0%) in children ≤ 18 years old ($p < 0.05$). In Mekong Delta (South- Vietnam): *H. pylori* seroprevalence was 367/913 (40.2%) in adults versus 219/683 (32.1%) in children ≤ 18 years old ($p < 0.05$). Factors related to *H. pylori* infection in children including: (1) low level of maternal education, (2) children taking food with fingers, (3) children fed by chewed food in childhood, (4) mother, brothers or sisters infected with *H. pylori*.

Diagnosis of *H. pylori* infection in adult and children. Serology only applies to epidemiological investigation of *H. pylori* infection for both adults and children. We evaluate the sensitivity and specificity of a new monoclonal antibody-based antigen-in-stool enzyme immunoassay for diagnosis of *H. pylori* infection in Vietnamese

children. The sensitivity of Premier Platinum HpSA PLUS was thus 96.6% (95% CI 93.3–98.5) and the specificity was 94.9% (95% CI 88.5–98.3). Diagnostic testing for *H. pylori* infection in children should be performed only when symptoms such as vomiting, persistent abdominal pain, and gastrointestinal bleeding can justify the gastroduodenoscopy with biopsy samples for examination. With children in need of treatment, tests for *H. pylori* status (before and after treatment) like adults. Urea breath test is one of the non-invasive tests that is mostly used in adults and teenagers, but it is rarely used in infants and young children.

Antibiotics resistance of *H. pylori* . * Primary and secondary antibiotic resistance of *H. pylori* in adults: Ten studies (three studies in English and seven in Vietnamese) were included in this review. Overall, the primary resistance rates of amoxicillin, clarithromycin, metronidazole, levofloxacin, tetracycline, and multidrug resistance were 15.0%, 34.1%, 69.4%, 27.9%, 17.9% and 48.8%, respectively. Secondary resistance rates of amoxicillin, clarithromycin, metronidazole, levofloxacin, tetracycline, and multidrug resistance were 9.5%, 74.9%, 61.5%, 45.7%, 23.5% and 62.3%, respectively. * Antibiotic resistance of *H. pylori* in children: A total of 2 original articles on antibiotic resistance of *H. pylori* in Vietnamese children were collected. The first study (2008) showed that the overall resistance to clarithromycin, metronidazole and amoxicillin was 113/222 (50.9%), 145/222 (65.3%) and 1/222 (0.5%), respectively. The second study (2016) showed that the overall resistance to clarithromycin, azithromycin, metronidazole, amoxicillin, cefixime, ciprofloxacin and levofloxacin was 56.9%), 64.1%, 30.3%, 21.5%, 11.3%, 2.1% and 0.5%, respectively.

Conclusion

The prevalence of *H. pylori* is increasing among Vietnamese adults and children, including ethnic minority children. The rates of clarithromycin and metronidazole resistance are high in both adults and Vietnamese children. Therefore, the choice of regimen and bacterial culture plays an important role, related to the effectiveness of *H. pylori* eradication treatment.

Key words: *Helicobacter pylori*

A potential biomarker panel to distinguish gastric cancer from duodenal ulcer: Result from GWAS in East Asian-type *H. pylori*

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CURRICULUM VITAE

Education

Sep 2006 - Oct 2012	General practitioner_ University of medicine and pharmacy HO CHI MINH CITY_ Vietnam
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Work Experience

Oct 2012 - Oct 2015	Endoscopist_ Endoscopy Department_ Cho Ray Hospital_ Vietnam
Oct 2015 - Oct 2019	PhD student, Department of Environmental and Preventive of Medicine, Oita university, Faculty of Medicine, Yufu, Japan
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ABSTRACT

Purpose : Bacterial genome-wide association study (GWAS) has emerged as an approach allowing comprehensive investigation of genetic variants determining a particular phenotype such as disease. East Asian-type *Helicobacter pylori* (hspEAsia) is linked to the highest risk of gastric cancer, but genetic difference between strains causing gastric cancer and others in East Asia remains unknown. This study aimed to explore genetic variants related to gastric cancer (GC) by using a GWAS approach within hspEAsia isolates.

Methods : Two groups of hspEAsia strains were constituted based on the diagnosis of host-related diseases (GC vs. duodenal ulcer). GWAS analysis was performed enabling to detect putative gastric cancer-related variants. $P^{FDR} < 0.01$ was considered as statistically significant. A rudimental risk score from each strain was calculated to weight the effect of SNPs. Receiver operating characteristics analysis was performed using "*pROC*" package in R version 3.4.4.

Results : 23 SNPs that were associated with gastric cancer and showed 20-30% frequency difference with $P_{FDR} < 0.01$. These candidates belonged to outer membrane proteins (*hopQ, horI*), *vacA*-like protein, metabolism or transport or flagella-related genes (*fecA_2, queA, trpC, pflA, folB, ModA, nuoN, pcnB*, Type II modification enzyme, putative lipopolysaccharide biosynthesis protein, methyl-accepting chemotaxis transducer) and hypothetical genes. The risk score calculated from the combination of such candidates was able to predict GC with the accuracy up to 93.5% (AUC 0.935 [95% CI, 0.91-0.97]).

Conclusions : Results based on bacterial GWAS approach could be used as biomarker panels to predict gastric cancer although further studies are necessary to validate the results.

Key words : Gastric Cancer, Duodenal Ulcer, *Helicobacter pylori*

Guidelines for the treatment of *H. pylori* infection in Korea, 2020 revised edition: Newly added indications for *H. pylori* eradication

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CURRICULUM VITAE

Educational Background

March, 1995-February, 2001	Seoul National University College of Medicine February 26, 2001: Medical Doctor
March, 2006-February, 2009	Seoul National University School of Public Health February 26, 2009: Master of Science in Public Health
March, 2009-August, 2011	Postgraduate School of Seoul National University College of Medicine

Professional Career

September, 2010-March, 2015	Assistant Professor, Department of Gastroenterology, Seoul National University Bundang Hospital
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Research Field

Gastric carcinogenesis
Esophageal cancer
Endoscopy
Helicobacter pylori
Oral, gastric, and gut microbiota

ABSTRACT

Since the Korean College of *Helicobacter* and Upper Gastrointestinal Research has first developed the guidelines for the diagnosis and treatment of *Helicobacter pylori* infection in 1998, the revised guidelines were proposed in 2009 and 2013 each by the same group. Since January 2018 the coverage of *H. pylori* eradication by national insurance has expanded in Korea; recent evidence should be reflected in the new guidelines; the need to provide new guidelines has emerged. In the 2020 revised edition, the guideline development committee drafted statements based on a systematic review and meta-analysis of previous studies. Besides the absolute indications of *H. pylori* eradication, the following 4 statements were considered to be included in the new guidelines.

1) *H. pylori* eradication can be helpful in subset of adults with unexplained iron deficiency anemia to increase hemoglobin (Grade of recommendation: weak, Level of evidence: very low). [Accepted]

2) *H. pylori* eradication is suggested after endoscopic resection for *H. pylori*-positive gastric adenoma to prevent metachronous recurrence (Grade of recommendation: weak, Level of evidence: low). [Accepted]

3) *H. pylori* eradication can be recommended in functional dyspepsia because eradication therapy provides long-term relief of dyspeptic symptoms (Grade of recommendation: weak, Level of evidence: high). [Accepted]

4) *H. pylori* eradication can be recommended for gastric cancer prevention in individuals with chronic atrophic gastritis and/or intestinal metaplasia (Grade of recommendation: weak, Level of evidence: very low). [Rejected]

To adopt the recommendations of the guidelines, the Delphi technique, which is a panel of experts on *H. pylori*, was used. Out of the 4 statements regarding the indications of *H. pylori* eradication, 1 statement on *H. pylori* eradication for the patients with atrophic gastritis and/or intestinal metaplasia was not accepted, while the other 3 were. It was mainly attributed to the fact that the meta-analysis did not provide evidence for the effectiveness of *H. pylori* eradication in reducing the risk for gastric cancer among *H. pylori*-infected individuals with these precancerous lesions.

In addition, even though it was not included in the new guidelines whether *H. pylori* eradication should be recommended for the first-degree relatives of gastric cancer patients, a recent large randomized controlled trial in Korea showed that among individuals with *H. pylori* infection who had a family history of gastric cancer in first-degree relatives, *H. pylori* eradication treatment can reduce the risk of gastric cancer (Choi IJ *et al. N Engl J Med* 2020;382:427-36). Therefore, *H. pylori* eradication should be recommended in this population in the future guidelines.

Guidelines for the treatment of *H. pylori* infection in Korea, 2020 revised edition
- Recent evidence for *H. pylori* eradication

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CURRICULUM VITAE

Educational Background

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2010	M.S. in Medicine, Graduate School of Medicine, Seoul National University, Seoul, Korea
2015	M.S. in Clinical Trials, International Programme, London School of Hygiene and Tropical Medicine, University of London, London, United Kingdom
2018	Ph.D. in Medicine, Graduate School of Medicine, Seoul National University, Seoul, Korea

Professional Career

2005-2006	Internship, Seoul National University Hospital, Seoul, Korea
2006-2010	Residency of Internal Medicine, Seoul National University Hospital, Seoul, Korea
2013-2015	Clinical fellowship, Division of Gastroenterology, Seoul National University Hospital, Seoul, Korea
2015-2018	Clinical Assistant Professor, Department of Internal Medicine, Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine, Seoul, Korea
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2019-	Associate Editor of BMC Gastroenterology

Research Field

Gastric cancer screening
Endoscopic resection for gastric cancer
Gastric cancer surveillance after endoscopic resection
H. pylori and gastric carcinogenesis
Reflux esophagitis

ABSTRACT

INTRODUCTION

The 2020 revised edition of the guidelines for the treatment of *Helicobacter pylori* infection in Korea is due to be released this year. This evidence-based guidelines were developed using the *de novo* process. Databases searched included MEDLINE, EMBASE, Cochrane CENTRAL, and KoreaMed from 2008 to 2017. The present guidelines provide eight statements about *H. pylori* eradication based on recent evidences.

GUIDELINE STATEMENTS AND EVIDENCES

1. Standard triple therapy

Statement: Standard triple therapy (standard dose proton pump inhibitor, amoxicillin 1g, clarithromycin 500mg twice daily) for 14 days is recommended as a first-line treatment (strong recommendation, moderate quality of evidence).

In the literature review, there were 26 randomized controlled trials (RCTs) that compared clarithromycin-containing triple therapy with other regimens as a first-line regimen in Korea. The pooled eradication rate from intention-to-treat (ITT) analysis was 71.6% (95% confidence interval [CI], 69.9-73.3). The eradication rate of 14-day therapy (78.1%; 95% CI, 75.2-80.7) was significantly higher than that of 10-day therapy (73.7%; 95% CI, 69.8-77.2; P <0.01) and 7-day therapy (70.0%; 95% CI, 68.5-71.4; P <0.01).

2. Sequential therapy

Statement: Sequential therapy (standard dose proton pump inhibitor and amoxicillin 1g twice daily for the first 5 days followed by standard dose proton pump inhibitor, clarithromycin 500mg, and metronidazole 500mg twice daily for the remaining 5 days) is recommended as a first-line treatment (strong recommendation, high quality of evidence).

A total of 24 RCTs were included in the systematic review that compared sequential therapy with other regimens as a first-line therapy. The pooled eradication rate was 79.3% (95% CI, 77.9-80.5). Sequential therapy achieved significantly higher eradiation rate than standard triple therapy (relative risk [RR], 1.37; 95% CI,

1.21-1.54; P <0.001).

3. Concomitant therapy

Statement: Concomitant therapy (standard dose proton pump inhibitor, clarithromycin 500mg, amoxicillin 1g, and metronidazole 500mg twice daily for 10 days) is recommended as a first-line treatment (strong recommendation, high quality of evidence).

There were 26 RCTs that compared concomitant therapy for 10 days or longer with other regimens for first-line eradication therapy in the literature search. The pooled eradication rates were 85% (95% CI, 82-88) after 10-day therapy and 86% (95% CI, 76-92%) after 14-day therapy. The eradication rate of 10-day concomitant therapy was higher than 10-day sequential therapy (risk difference [RD], 0.04; 95% CI 0.00-0.08; P = 0.04) and 10-/14-day standard triple therapy (RD, 0.17; 95% CI, 0.05-0.30; P = 0.003).

4. Tailored therapy

Statement: Clarithromycin resistance test by PCR or sequencing is recommended when a 7-day standard triple therapy is considered as a first-line treatment (strong recommendation, low quality of evidence).

Database search identified no RCT that compared tailored therapy based on clarithromycin resistance test by PCR or sequencing with empirical therapy as a first-line treatment. In three observational studies that adopted dual priming oligonucleotide (DPO)-based multiplex PCR, tailored therapy showed higher eradication rate than empirical therapy.

5. Bismuth quadruple therapy

Statement: Eradication rates of bismuth quadruple therapy (standard dose proton pump inhibitor twice daily, metronidazole 500mg three times daily, bismuth 120mg and tetracycline 500mg four times daily for 10 to 14 days) are similar to 14 days standard triple therapy, 10 days concomitant and sequential therapy, however because of its high adverse effects and potential use as a second-line therapy, it can be recommended to be used as first-line therapy if other first-line therapy options are not available (weak recommendation, moderate quality

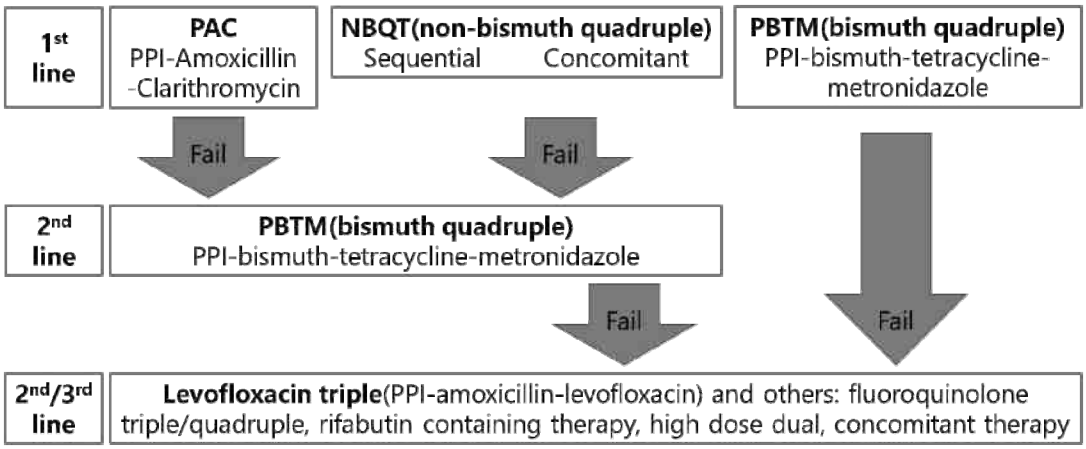

Figure 1. Selection of a first-line and salvage treatment regimen for *H. pylori* infection

of evidence).

Meta-analyses were conducted based on nine RCTs that compared bismuth quadruple therapy with other therapies as a first-line regimen. The pooled eradication rate was 84.5% (95% CI, 74.9-90.9). However, 10-/14-day bismuth quadruple therapy was not significantly superior to 14-day standard triple therapy (RR, 1.28; 95% CI, 0.97-1.70), 10-day sequential therapy (RR, 0.96; 95% CI, 0.83-1.12), or 10-day concomitant therapy (RR, 1.01; 95% CI, 0.93-1.10) in the successful eradication. Meanwhile, bismuth quadruple therapy was associated with significantly higher adverse event rates than other regimens (RR, 1.72; 95% CI, 1.23-2.40).

6. Salvage therapy

Statement: After failure of standard triple therapy, a bismuths quadruple therapy for 14 days is recommended as a second-line therapy (strong recommendation, high quality of evidence).

Overall, 36 RCTs that compared two or more salvage regimens were identified, and 16 RCTs were included in the meta-analyses. After failure of standard triple therapy, 10-/14-day bismuth quadruple therapy showed pooled eradication rate of 81.6% (95% CI, 76.9-85.6). The 14-day regimen showed a significantly higher eradication rate than the 7-day regimen (RD, 0.09; 95% CI, 0.02-0.15; $P = 0.006$). The eradication rate of bismuth quadruple therapy was not significantly higher than that of levofloxacin triple therapy (RD, -0.06; 95% CI, -0.14 – 0.02; $P = 0.160$).

Statement: After failure of non-bismuth quadruple therapy (sequential or concomitant therapy), a bismuth quadruple therapy is recommended as a second-line therapy (strong recommendation, very low quality of evidence).

There was no RCT that compared salvage regimens after failure of first-line non-bismuth quadruple therapy. In a published systematic review of observational studies, bismuth quadruple therapy showed pooled eradication rate of 84% (95% CI, 0.63-1.06).

Statement: After failure of bismuth quadruple therapy as 1st line or 2nd line (after failed standard triple or non-bismuth quadruple therapy), a levofloxacin triple therapy can be recommended as a salvage therapy (weak recommendation, very low quality of evidence).

No RCT has compared rescue options after failure of bismuth quadruple therapy as first- or second-line regimen. A published systematic review showed that levofloxacin triple therapy achieved pooled eradication rate of 70.0% (95% CI, 62.4-76.6). A Korean multicenter observational study reported that levofloxacin triple therapy as a third-line regimen showed successful eradication in 56.9% (62/109) of patients. There were other salvage regimens including triple therapy containing other fluoroquinolones, fluoroquinolone quadruple therapy, rifabutin containing regimen, high dose dual therapy, and concomitant therapy. However, there were no sufficient evidences to support those regimens.

E-poster Presentation

PD-001

Propolis ethanol extract activity as anti-*Helicobacter pylori* on clarithromycin and metronidazole resistant strains

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Purpose : Eradication of *Helicobacter pylori* infection still become issue in Indonesia because of antimicrobial resistance is still high, especially for metronidazole and clarithromycin that is commonly used in the national regiment therapy. Propolis extract is well known substance which has antimicrobial effect against some gram-negative bacteria, but the effect against *Helicobacter pylori* remain unknown. The aim of this study was to know the antimicrobial effect of Propolis extract against *Helicobacter pylori* in clarithromycin and netronidazole resistant strains.

Methods : Raw propolis from bee Trigona spp. obtained from South Sulawesi, Indonesia was extracted by reflux method using 70% ethanol, filtered and concentrated. Anti-*Helicobacter pylori* effect of ethanol propolis extract was tested on 10 types of *Helicobacter pylori* strains isolated from dyspeptic patients. Microdilution method and scratch method based on the results of the microdilution test was used in determining the minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) value of propolis extract used. Combination effects were determined using the paper tape method.

Results : Ethanol propolis extracts showed inhibition activity at concentrations of 5% and 10% on all strains *Helicobacter pylori*. MIC and MBC values were in the range of 1024 - 8192 μg/mL and 1024 - 16348 μg/mL, respectively. Propolis extract concentration required to obtain a bactericidal effect against *Helicobacter pylori* was the same or eight-fold higher than the corresponding value. The combination of propolis extract and metronidazole or claritomycin showed an additive effect.

Conclusions : Propolis might be can become additional treatment against *Helicobacter pylori* infection that resistance for metronidazole and clarithromycin treatment.

Key words : *Helicobacter pylori*, Propolis, Clarithromycin; Metronidazole

PD-002

Comparison of furazolidone versus clarithromycin for eradication of *Helicobacter pylori* infection: A randomized multicenter clinical trial

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Purpose : To evaluate efficacy of furazolidone versus clarithromycin in quadruple therapy for eradication of *Helicobacter pylori* (HP)

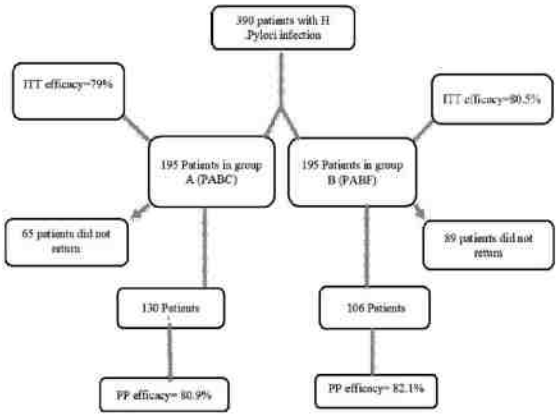
Methods : During a 6 months period, all of the cases of HP infection in 3 referral tertiary centers included and randomly allocate to receive either clarithromycin or furazolidone base quadruple regimen. For all of the participants pantoprazole continued for 4 more weeks, They underwent urea breath test to prove eradication.

Results : Overall 390 patients included (165 male (42%), average age 44.2y). They diagnosed as non-ulcer dyspepsia (311 cases), peptic ulcer disease (30 cases) and intestinal metaplasia (45 cases). The participants randomly allocated to groups A & B to receive either clarithromycin or furazolidone. In groups A and B, 80.9% & 82.1% of participants achieved eradication respectively (P = 0.819). During study, there was not any major complication but 3.1% of participants in each group re-

ported minor side effects. In sub group analysis, the eradication rate of clarithromycin among patients with non-ulcer dyspepsia, PUD and intestinal metaplasia were 80%, 100% & 55.6% respectively. These figures in group B (furazolidone) were 80.7%, 100% & 85.7% respectively (P = 0.906, 0 and 0.162; table 2). Overall, there was no significant difference in success rate between clarithromycin and furazolidone but in cases with intestinal metaplasia, the positive results with furazolidone was more (85.7% vs. 55.6%).

Conclusions : In areas with high rate of resistance to clarithromycin, furazolidone could be a potential substitute in HP eradication regimen and in cases with intestinal metaplasia; furazolidone could be even more efficient.

Key words : Furazolidone, Clarithromycin, Hp



Flow chart of study (ITT: intention to treat; PP: per protocol; PABC: pantoprazole, amoxicillin, bismuth, clarithromycin; PABF: pantoprazole, amoxicillin, bismuth, furazolidone).

PD-003

Helicobacter pylori eradication affects platelet count recovery in immune thrombocytopenia

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Purpose : *Helicobacter pylori (H. pylori)* infection is on the rise as a cause of ITP, and the results show that platelet recovery can be achieved after successful eradication. The aim of this study is to clarify the long-term effect of *H. pylori* eradication monotherapy on the platelet count recovery in patients with ITP.

Methods : This study evaluated the long-term effects of *H. pylori* eradication monotherapy on platelet count recovery in patients with ITP. *H. pylori* eradication was analyzed in 61 ITP patients. Patients who maintained a complete response (CR) for more than six months were classified as sustained responders (SR).

Results : The prevalence of *H. pylori* infection was 54.3% (75/138) and the success rate of eradication with first-line therapy was 71.4% (35/49). Among the 61 patients, patients who achieved a complete response (CR) at 2 months maintained a higher platelet counts thereafter (Figure 1). At 1 year after eradication, platelet count increased 2.78 times in the eradicated group, 1.36 times in the sustained infection group and 1.33 times in the no infection group compared with baseline ($P = 0.016$). The patients in the eradicated group and reached CR at 2 months after eradication showed SR in 77.8% (vs 14.3% in NR, $P = 0.010$, Table 1).

Conclusions : In ITP patients with *H. pylori* infection, the duration of CR in the eradicated group was longer than sustained infection group, and obtaining CR at 2 months was associated with a sustained response.

Key words : Immune Thrombocytopenia, *Helicobacter pylori* Eradication, Platelet Recovery

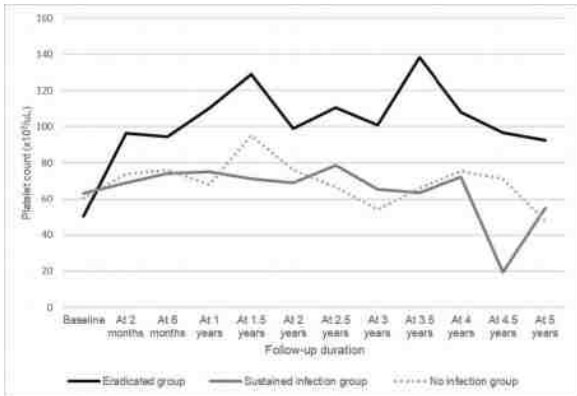

Figure 1. Trend of Platelet Counts during 5-Year Follow-Up among Groups with *H. pylori* Infection Status

Table 1. Baseline characteristics between sustained responder and non-sustained responder in eradicated group

	Sustained response		Non-sustained response		*P*-value
	N	Mean ± SD	N	Mean ± SD	
Age (year)	10	50.4 ± 9.0	15	54.5 ± 14.3	0.434
Sex (male)	3	37.5%	5	62.5%	0.741
Platelet, $\times 10^3$/dL	10	61.6 ± 24.6	15	43.2 ± 21.1	0.058
MPV, fL	9	11.5 ± 2.9	12	10.5 ± 1.3	0.287
WBC, $\times 10^3$/dL	10	8.2 ± 2.2	15	7.7 ± 3.1	0.727
Neutrophil, $\times 10^3$/dL	10	5.6 ± 2.1	15	4.7 ± 2.3	0.344
Lymphocyte, $\times 10^3$/dL	10	2.1 ± 0.9	15	2.4 ± 1.2	0.536
Monocyte, $\times 10^3$/dL	10	0.4 ± 0.2	15	0.4 ± 0.2	0.859
Eosinophil, $\times 10^3$/dL	10	0.1 ± 0.1	15	0.3 ± 0.5	0.309
Basophil, $\times 10^3$/dL	10	0.0 ± 0.0	15	0.0 ± 0.0	0.518
Hemoglobin, g/dL	10	13.4 ± 1.8	15	12.3 ± 3.2	0.318
Reticulocyte, g/dL	5	76.3 ± 22.1	9	60.4 ± 32.7	0.685
NLR	10	3.4 ± 4.2	15	1.8 ± 0.8	0.256
CRP, mg/dL	6	0.1 ± 0.1	7	1.3 ± 2.0	0.148
ESR, mm/hr	4	11.0 ± 6.1	6	33.2 ± 30.8	0.201
Antinuclear antibody positivity	0	0.0%	2	100.0%	0.097
Treatment response at 2 months					
Complete response	7	77.8%	2	22.2%	0.010
Response	1	50.0%	1	50.0%	
No response	2	14.3%	12	85.7%	

PD-004

Effect of *Helicobacter pylori* eradication after subtotal gastrectomy on the survival rate of patients with gastric cancer: Follow-up for up to 15 years

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Purpose : *Helicobacter pylori* (HP) is known to play an important role in the development of gastric cancer (GC). The aim of this study was to analyze the effect of HP eradication on the survival rate and cancer recurrence in patients who underwent subtotal gastrectomy for GC.

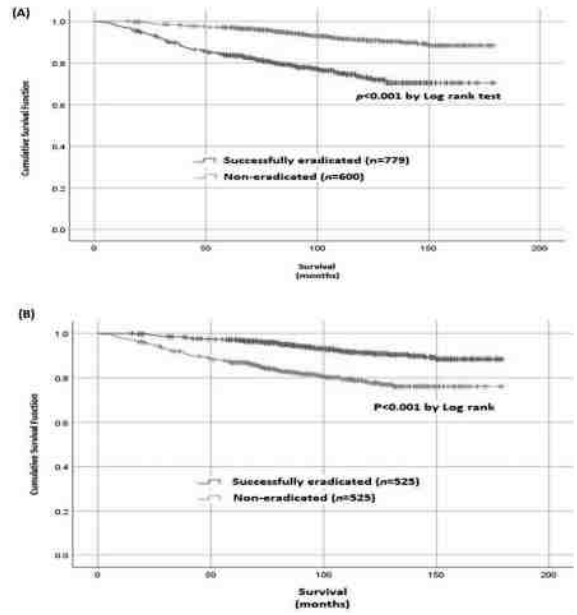
Methods : A total of 1,379 patients diagnosed with gastric adenocarcinoma who received surgical treatment at the Seoul National University Bundang Hospital from 2003 to 2017 and tested positive for HP infection were retrospectively analyzed. The overall and GC-related survival according to HP eradication were compared; other risk factors for GC-specific death and cancer recurrence were analyzed, and propensity score matching was performed.

Results : Statistically significant benefits of overall and GC-specific survival were observed in the eradicated group (*n*=779) compared to the non-eradicated group (*n*=600) (all p<0.001), and these significant benefits were maintained after propensity score matching (each group *n*=525, all p<0.001). In Cox proportional hazards univariate and multivariate analyses, age ≥60 years, final cancer stage, and HP positivity were found to be independent risk factors for GC-specific death (age ≥60 years, adjusted hazard ratio [aHR] 1.74, p=0.014; cancer stage II, aHR 5.94, p<0.001; cancer stage above III, aHR 17.35, p<0.001; HP positivity, aHR 3.79, p<0.001). In addition, final cancer stage and HP positivity were independent risk factors for cancer recurrence (cancer stage above III, aHR 6.62, p=0.004; HP positivity, aHR 3.89; p<0.001).

Conclusions : Our results suggest that treatment for HP should be conducted more intensively in patients who are surgically treated for GC, regardless of cancer stage.

Key words : *Helicobacter pylori*, Subtotal Gastrectomy, Eradication

FIGURE 1 Comparisons of overall survival depending on *Helicobacter pylori* eradication. Benefit of overall survival was observed in successfully eradicated group before (A) and after (B) propensity score matching compared to non-eradicated group, with statistical significance (p<0.001). Cumulate survival was calculated using Kaplan-Meier; p Value was calculated using Log-rank test.



PD-005

Ten-day bismuth quadruple therapy versus 7-day proton pump inhibitor-clarithromycin containing triple therapy as first-line treatment of *Helicobacter pylori* eradication: An open-label, randomized trial

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Purpose : Eradication rates of the first-line *Helicobacter pylori* treatment using proton pump inhibitor-clarithromycin containing standard triple therapy (STT) have decreased to less than 80% because of high clarithromycin resistance in Korea. Guidelines recommended bismuth quadruple therapy (BQT) as a first-line treatment in areas of high clarithromycin resistance. The aim of this study was to compare the efficacy of 10-day BQT with 7-day STT as first-line treatment.

Methods : In this open-label, randomized controlled trial, subjects with *H. pylori* infection were randomly assigned to receive either 10-day BQT (bismuth 300 mg four times, lansoprazole 30 mg twice, metronidazole 500 mg three times, and tetracycline 500 mg four times daily) or 7-day STT (lansoprazole 30 mg, amoxicillin 1,000 mg and clarithromycin 500 mg, each taken twice daily). Primary outcome was eradication rates of first-line treatment by intention-to-treat analysis.

Results : Between September 2015 and May 2017, 352 patients were randomized to receive either 10-day BQT (n=175) or 7-day STT (n=177). In the intention-to-treat population, eradication rate was 74.3% (130/175 patients) in the BQT group and 57.1% (101/177 patients) in the STT group (P=0.001). The per-protocol analysis showed a higher eradication rate of BQT group (92.9%, 105/113 patients) than that of STT group (70.1%, 94/134 patients; P<0.001). No significant difference was found in the occurrence of adverse events between the two groups (68.7% in BQT group vs. 58.8% in STT group; P=0.06).

Conclusions : The 10-day bismuth quadruple therapy was superior to the 7-day standard triple therapy as first-line treatment for *H. pylori* eradication in Korea.

Key words : *Helicobacter pylori*, Quadruple Therapy, Triple Therapy

PD-006

Endoscopic submucosal dissection versus esophagectomy for mucosal esophageal squamous cell carcinoma: Treatment outcomes and factors affecting survival

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Purpose : This study aimed to compare the long-term outcomes of mucosal esophageal squamous cell carcinoma (T1aESCC) in endoscopic resection (ER) and surgical resection (SR) groups, and to investigate the factors affecting survival.

Methods : We retrieved data for 263 patients with T1aESCC who underwent ER (n=200) or SR (n=63). Relevant clinical and tumor-specific parameters were reviewed. Underlying comorbidity was scored using Charlson co-morbidity index (CCI).

Results : During a mean follow-up of 54.4±20.4 months, the 5-year overall survival (OS) of all T1aESCC patients was 85.7% (86.8% in ER and 82.4% in SR group; p=0.631, Figure 1A). In multivariate analysis, CCI was a significant factor affecting survival (p<0.001). The 5-year OS was 60.2% in patients with CCI >2 and 88.2% in patients with CCI ≤2 (p<0.001, Figure 1B). The 5-year cumulative incidence of primary esophgeal cancer (EC) recurrence was 1.9% and metachronous esophageal cancer (EC) recurrence was 15.1% in ER group (0% in SR group). The procedure-related adverse events occurred in 10.0% in ER and 38.1% in SR (p<0.001). Among the 24 (12.0%) and 10 (15.9%) deaths in ER and SR group, respectively, primary EC-specific death was not reported. The major causes of death were second primary cancers in ER group (75%), and post-operative complications or organ failure in SR group (70%).

Conclusions : Long-term survival was excellent in pa-

tients undergoing ER or SR for T1a ESCC. The prognosis of T1a ESCC was significantly associated with underlying comorbidity. Attention should be paid to metachronous cancer recurrence in ER group and operation-related adverse events in SR group.

Key words : Squamous Cell Carcinoma, Endoscopic Mucosal Resection, Esophagectomy

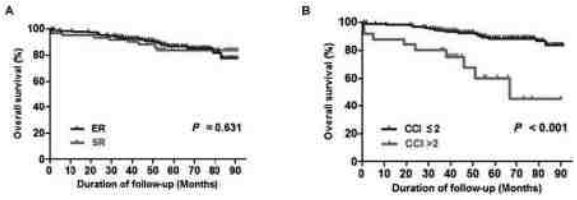

Figure. Kaplan-Meier curves comparing overall survival (OS) for ESD and esophagectomy (A) and CCI≤2 and >2 (B).

PD-007

The influence of direct oral anticoagulants on delayed bleeding in patients with early gastric neoplasms who underwent endoscopic submucosal dissection

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Purpose : Direct oral anticoagulants (DOACs) are widely prescribed for the prevention of stroke in patients with atrial fibrillation. Indications for their use have been recently expanded. We aimed to evaluate the risk of delayed bleeding in DOAC users who underwent endoscopic submucosal dissection (ESD) for gastric neoplasms.

Methods : Retrospective analyses were conducted at a single tertiary center between January 2015 and July 2019. Patients who underwent gastric ESD were divided into four groups [no medication (no med), DOAC, warfarin (WFR), and anti-platelet (anti-PLT) agent], according to the periprocedural medications administered. Endpoints included post-ESD bleeding and thromboembolic events.

Results : Of 1,634 patients, 23 (1.4%) were taking a DOAC but stopped the medication for 2 days prior to ESD, with resumed administration within 1-2 days after the procedure. Delayed bleeding rates were 2.1% (32/1,499), 8.7% (2/23), 14.3% (2/14), and 11.2% (11/98) in the no med, DOAC, WFR, and anti-PLT groups, respectively (P<0.001). However, there were no differences in delayed bleeding between no med and DOAC groups after propensity score matching (5.8% vs 8.7%, P=0.638). Multivariable analysis revealed that taking a DOAC was not statistically associated with post-ESD bleeding (adjusted OR 2.4; 95%CI 0.41-13.73; P=0.335)

Conclusions : Rates of bleeding in DOAC users appeared higher than in the no med group after ESD with 2 days of medication cessation. However, this difference was insignificant after multivariable analysis, suggesting the gastric bleeding after ESD bleeding may be caused by a patient's underlying condition rather than by medication use alone.

Key words : Direct Oral Anticoagulants, Endoscopic Submucosal Dissection, Delayed Bleeding

Table1. Comparison of crude bleeding rate and median time of bleeding between groups divided by medication

	No med	DOAC	Warfarin	Anti-platelet	p-value
Delayed bleeding, N (%)	32/1499 (2.1%)	2/23 (8.7%)	2/14 (14.3%)	11/98 (11.2%)	<0.001
Time of bleeding, median (range), days	1.0 [0.0-18.0]	4.5 [1.0-8.0]	6.5 [6.0-7.0]	1.0 [0.0-15.0]	0.251
RBC transfusion, N(%)	22 (1.5%)	1 (4.3%)	2 (14.3%)	8 (8.2%)	<0.001
Second look EGD, N(%)	28 (1.9%)	0 (0.0%)	2 (14.3%)	7 (7.1%)	0.002
Hemostasis, N(%)	14 (0.9%)	0 (0.0%)	1 (7.1%)	3 (3.1%)	0.040
Thromboembolic event, N(%)*	1 (0.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	

DOAC, Direct oral anticoagulant; RBC, Red blood cell; EGD, Esophagogastroduodenoscopy

* Thromboembolic event of acute coronary syndrome occurred 2 months after undergoing ESD which was less likely to be related to the procedure

Table 2. The influence of the antiplatelet agent or anticoagulation on delayed bleeding after endoscopic submucosal dissection: Univariable and multivariable logistic regression analysis

	Univariable			Multivariable (Model 1)*			Multivariable (Model 2)†		
	OR	95% CI	P-value	OR	95% CI	P-value	OR	95% CI	P-value
Medication									
No med	1 (ref)			1 (ref)			1 (ref)		
DOAC	4.366	0.982-19.413	0.053	3.609	0.796-17.141	0.095	2.571	0.410-13.725	0.315
Warfarin	7.641	1.642-35.567	0.010	4.723	0.858-25.991	0.074	1.418	0.153-13.171	0.759
Anti-PLT	5.796	2.826-11.889	<0.001	5.083	2.286-25.991	0.074	4.767	2.018-11.260	<0.001
Comorbidity									
HTN	1.924	1.076-3.441	0.027	2.023	1.083-3.805	0.027	1.639	0.826-3.252	0.159
CAD	3.866	1.869-8.592	<0.001	2.349	1.001-5.512	0.050	3.104	1.28507.416	0.013
CLD	4.254	1.919-9.432	<0.001	4.087	1.651-10.118	0.002	4.492	1.793-11.258	0.001
Specimen size	1.437	1.215-1.699	<0.001				1.549	1.282-1.872	<0.001
Location									
Upper-middle	1 (ref)						1 (ref)		
Lower	2.015	1.066-3.886	0.031				2.402	1.195-4.826	0.014

OR, Odds ratio; CI, Confidence interval; DOAC, Direct oral anticoagulant; Anti-PLT, Anti-platelet; HTN, Hypertension; CAD, Coronary artery disease; DL, Dyslipidemia; CHF, Chronic heart failure; CKD, Chronic kidney disease; CLD, Chronic liver disease

*BMI, Comorbidities (HTN, DL, CAD, CHF, CKD, CLD, Stroke, Malignancy), medication were adjusted in model 1.

† Model 1 + specimen size, location, lymphatic invasion were adjusted in model 2.

PD-008

Discordant prognostic significance of negative lymph node size in patients with oesophageal cancer treated with either surgery or neoadjuvant chemotherapy and surgery – results from the MRC OE02 trial

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Purpose : Lymph node (LN) status is a strong prognostic factor in patients with oesophageal cancer (OeC). Regional LNs play a central role in the local anti-tumour immune surveillance. We hypothesized that the size of regional tumour draining, negative LNs (LNneg) is a surrogate marker of an activated anti-tumour immune response and that the presence of enlarged LNneg is related to good patient prognosis.

Methods : The long axis of LNs was measured as surrogate of LN size in haematoxylin and eosin stained sections of LNs from 307 OE02 trial patients (148 treated with surgery alone (S patients), 159 treated with neoadjuvant chemotherapy followed by surgery (CS patients)). The relationship between LNneg size, clinicopathological variables and patient overall survival (OS) was compared between treatment arms.

Results : 1041 LNnegs from CS patients and 1017 LNnegs from S patients were analyzed. S patients with large LNnegs survived significantly longer than S patients with small LNnegs (p=0.010). In contrast, CS patient survival was not related to LNneg size (p=0.410). There was no survival difference between CS patients and S patients neither for large LNnegs (p = 0.689), nor for small LNnegs (p= 0.162).

Conclusions : This is the first study to investigate LNneg size in OeC patient treated with CS or S. Our results suggest that OeC patients with large LNnegs at the time of diagnosis may not derive additional benefit from neoadjuvant chemotherapy and could be considered for treatment de-escalation e.g. treated by surgery alone.

Key words : Oesophageal Cancer, Neoadjuvant Chemotherapy, Lymph Nodes

PD-009

Effect of dietary pattern on gastric cancer: Multi-center prospective registry

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Purpose : Dietary effect on gastric cancer taking *Helicobacter pylori* status into account has rarely been evaluated and has therefore been investigated in this study.

Methods : Gastric cancer patients and healthy subjects were prospectively registered by 6 hospitals from October 2016 to December 2018. Questionnaires included epidemiologic factors and dietary patterns. Multivariate analysis adjusted for many epidemiologic factors (Model I) and additionally *H. pylori* (Model II) was conducted to investigate dietary effect on gastric cancer.

Results : A total of 5535 subjects (1629 gastric cancers; 3906 consecutive controls) were enrolled. In Model I, salty diet (odd ratio, OR, 1.98; 95% CI, 1.58-2.48), spicy diet (OR, 1.87; 95% CI, 1.51-2.31), and additional seasoning (OR, 7.19; 95% CI, 3.87-13.37) were strongly associated with gastric cancer. Serving frequency of fruit, vegetables, seed, and soybean/tofu were inversely associated with gastric cancer with a dose-dependent pattern, whereas some food groups showed a non-linear association; U shape or modified J-shape. Dietary effect on gastric cancer in model II was similar to that in model I, but the effect size of several dietary factors was more prominent in Model II. Sub-analysis of Model II based by sex showed that effect direction of dietary pattern on gastric cancer was similar between men and women, but adjusted OR in salty diet, additional seasoning, and rarely intake of meat was markedly higher in women than men.

Conclusions : Serving frequency of some food groups were inversely associated with gastric cancer with a

dose-dependent pattern, whereas many food groups showed a non-linear association.

Key words : Gastric Cancer, Diet, *Helicobacter pylori*

PD-010

Association of regular arrangement of collecting venules pattern of gastric mucosa, histopathology and rapid urease test in diagnosing *Helicobacter pylori* gastritis: A single tertiary hospital

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Purpose : To determine if absence of RAC is an indicator of *Helicobacter pylori* infection among patients who underwent esophagogastroduodenoscopy.

Methods : A prospective cross-sectional study of adult patients who underwent diagnostic workup for *H. pylori* gastritis.

Results : Twenty-eight patients were included. Mean age was 49.68 + 15.75 years and 68% were females. Twenty-two were found to have RAC-positive while 6 were RAC-negative. Epigastric pain (77%) is the most common clinical presentation of RAC-positive patients. In determining presence of *H. pylori*, 95% were negative in histopathology and 78% were negative in rapid urease test. The presence of RAC has 87.5% sensitivity, 75% specificity, and 85.7% accuracy in determining a normal gastric mucosa. Presence of RAC was 3.5 times as likely to correlate with normal *H. pylori*-negative gastric mucosa as compared to *H. pylori*-positive. Absence of RAC (aRAC) was 83% less likely to be seen in *H. pylori*-negative gastric mucosa. A 95.5% probability that the gastric mucosa is normal or without *H. pylori* when RAC is present while 50% probability that the patient is *H. pylori*-positive when RAC is absent. The absence of RAC has approximately 75% sensitivity and 87.5% specificity to detect a *H. pylori*-positive gastric mucosa; with 85.71% accuracy. All patients who were RAC-negative had positive rapid urease test results while patients who were RUT negative had RAC-positive gastric mucosa.

Conclusions : The absence of regular arrangement of collecting venules in the gastric mucosa using standard endoscopy can predict a *H. pylori* infection. RAC can be used as a good alternative to rapid urease test and histology in the diagnosis of *H. pylori* gastritis.

Key words : *Helicobacter pylori,* Regular Arrangement of Collecting Venules, Rapid Urease Test

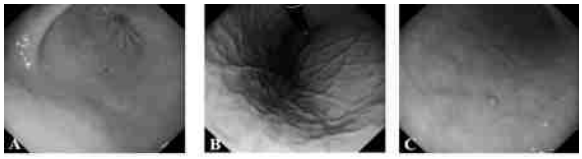

Figure 1. Gastric Mucosa of Negative *Helicobacter pylori*

A. Smooth and pinkish mucosa of antrum. B. Retroflexed view, presence of RAC on the gastric body. C. Fundic gland polyp, midbody

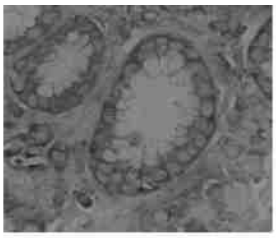

Figure 2. Histopathology of Gastric Mucosa with *Helicobacter pylori* infection showing Gram-negative helical shapes using Giemsa stain

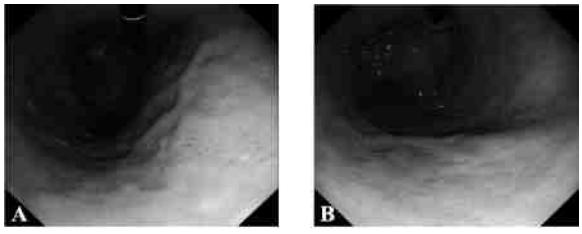

Figure 4. Gastric Mucosa of Positive *Helicobacter pylori*
A and B. Atrophic mucosa with red spots.

PD-011

Prevalence of *H. pylori* in chronic dyspepsia at Central Hospital: A single-center experience in Cambodia

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Purpose : The diagnostic evaluation of patients with chronic dyspepsia may differ geographically according to patient age, prevalence of *Helicobacter pylori* and risk of peptic ulcer and gastric cancer. The characteristics and appropriate investigation of Cambodian patients with dyspepsia have a few studies in private health care. Aim

of study: This study was to investigate the characteristics of Cambodian patients with chronic dyspepsia, the esophagogastroduodenoscopy (EGD) and biopsy to identifying patients with organic causes of dyspepsia.

Methods : We conducted a retrospective, single-center study, attending 2 years from 1st July 2017 to 31th June 2019 at Central Hospital, Phnom Penh, Cambodia. 160 adults included criteria with chronic dyspepsia that underwent EGD. We describe epidemiological, clinical characteristics, endoscopic aspects and *H. pylori* prevalence of patients with functional or organic causes of chronic dyspepsia.

Results : A total of 160 patients underwent EGD during the study period, 57.50% were male, with a mean age of 42.5 years. Subjects came primarily from Phnom Penh (83.75%). The majority of patients had epigastric pain/burning alone (34.37%) followed by postprandial fullness/early satiety alone (33.13%) and overlapping symptoms of epigastric pain/burning and postprandial fullness/early satiety (33.12%),. Organic causes were diagnosed in 14.38% of patients. The mostly organic causes of peptic ulcer (5.62%), followed by gastric cancer (1.87%). The prevalence of c*H. pylori* infection was 31.39% in functional dyspepsia and was 34.78% in organic dyspepsia.

Conclusions : The majority of patients with chronic dyspepsia at Central Hospital are diagnosed with functional dyspepsia related *H. pylori*. The cause of organic dyspepsia related *H. pylori* is still high.

Key words : Chronic Dyspepsia, *H. pylori*, Gastric Cancer

PD-012

Application of whole process management based on Smartphone Application Software in eradication of *Helicobacter pylori*

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Purpose : To explore the role of the whole process management mode of Smartphone Application Software in the eradication of *Helicobacter pylori*.

Methods : 180 patients with *H. pylori* were treated with bismuth containing standard quadruple therapy for 14 days. They were randomly divided into control group (87 cases) and observation group (93 cases). The patients in the control group received routine knowledge education and medication guidance; the patients in the observation group received relevant knowledge education, medication timing reminders and follow-up reminders by using Smartphone Application software. The incidence of adverse drug reactions, treatment compliance and eradication rate were compared between the two groups.

Results : There were 61 adverse reactions in the observation group and 69 in the control group ($P < 0.05$). In the observation group, 91 cases completed the whole course of treatment, 89 cases returned to the clinic on time, 82 cases were successfully eradicated, while in the control group, only 78 cases completed the whole course of treatment, 72 cases returned to the clinic on time, 61 cases were successfully eradicated. There were statistically significant differences in the complete treatment rate, on-time follow-up rate and overall eradication rate between the two groups ($P < 0.05$), but there was no significant difference in the eradication rate among the patients who were re examined ($P > 0.05$).

Conclusions : The whole process management mode of Smartphone Application software can reduce the incidence of adverse drug reactions, improve the compliance of whole process treatment and follow-up, and maintain the effective eradication rate.

Key words : Smartphone, Application Software, *Helicobacter pylori*

PD-013

Therapeutic potential of capsanthin against gastric ulcer: Bioactivity and phytopharmaceutical importance against digestive disorders

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Purpose : Urease and H+/K+-ATPase enzyme are the major causes of gastric ulcer induced by *Helicobacter py-*

lori, allow them to survive at low pH inside the stomach. Capsanthin is a red color crystalline pigment mostly synthesized and accumulated in the *Capsicum annuum* fruits.

Methods : In order to know the medicinal importance of capsanthin for the treatment of gastric ulcer, experimental studies data have been collected from various scientific sources. To explore the possible mechanism of anti-ulcer activity, capsanthin was searched for their inhibitory potential against gastric ulcers. Molecular mechanism have been also searched to explore their potential for the treatment of gastric ulcer.

Results : Capsanthin isolated from *Capsicum annuum* is a red color pigment in the crystalline form. Capsanthin is lipophilic in nature and is mostly synthesized and accumulated in red Capsicum fruits. Literature database analysis revealed the importance of capsanthin for their anti-ulcer activity. Molecular studies showed that capsanthin well accommodate in the active site of the enzyme. Capsanthin is also considered a functional compound due to its antioxidant activities.

Conclusions : Capsanthin was found to be effective in gastric ulcer and identified as potent enzyme inhibitors. Molecular study suggests that capsanthin is a potent anti-ulcer that interfere enzymes by binding to a novel site and revealed their therapeutic importance against gastric ulcer with their molecular mechanism.

Key words : Gastric Ulcer, Enzyme, Capsanthin

PD-014

The incidence of *Helicobacter pylori* infection based on the results of CLO rapid tests and histopathology in dyspepsia patients at the center of gastroentero-hepatology , wahidin sudirohusodo hospital, Makassar, South Sulawesi, Indonesia

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Purpose : *Helicobacter pylori* is a major cause of peptic ulcer, chronic gastritis and gastric malignancy. Aims of this study is to look at endoscopic features in patients with *H. pylori* infection based on the results of the CLO Rapid test and histopathology in dyspepsia patients who undergo Esofagogastroduodenoscopy (EGD) examinations at the Center of Gastroentero-Hepatology Hospital, Wahidin Sudirohusodo, Makassar.

Methods : This Retrospective Descriptive Study was conducted based on the medical records of patients with dyspepsia who underwent EGD examination and continued with CLO rapid test and histopathology.

Results : EGD examination was performed in 633 patients with dyspepsia. As many as 291 *H. pylori* examinations were performed using the CLO rapid method or histopathology, the prevalence of *H. pylori* positive was 54%. There were 153 men (52.57%) and 138 women (47.42%) with an age range of 15-25 years (10.43%), 76-40 years old (76 people (26, 11%), aged 41-60 years as many as 138 people (47.42%) and over 60 years of age as many as 67 people (23.02%). The most common complaints were heartburn (71.17%), bloating (67.69%), nausea (58.76%), weight loss (40.20%) and anorexia (23.36%). The description of EGD examination results showed the anatomic lesions were PRGE 143 cases (22.6%) and antral gastritis (19.7%).

Conclusions : Prevalence of *H. pylori* infection in dyspepsia patients was based on a CLO rapid examination or histopathology of 54%. Positive results are most common in men, the age group 41-60 years, and in patients with complaints of heartburn, bloating and nausea. EGD examination showed the most features of PRGE and antral gastritis.

Key words : *H. pylori,* CLO Rapid Test, Histopathology

PD-015

Description of *Helicobacter pylori* examination based on rapid urease test in non-variceal upper gastrointestinal bleeding that run elective endoscopy at Wahidin Sudirohusodo Hospital, Makassar, Indonesia

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Purpose : Non-variceal upper gastrointestinal bleeding

remains a major challenge for gastrointestinal emergencies. Annual incidence reaches 50-150 people per 100,000 population. Causes of bleeding: peptic ulcer, Mallory-Weiss tear, erosive gastritis, esophagitis, malignancy, angiodysplasia, and others. Peptic ulcer occupies is the top etiology of bleeding. *H. pylori* infection is a cofactor for the development of three important diseases.

Methods : This research is a retrospective descriptive study and evaluation starts from all patients who have complaints of bleeding in the form of hematemesis and melena. Data description of *H. pylori* images based on endoscopic results: etiology of hemorrhage, lesion abnormalities and location were identified using descriptive crosstabulation analysis.

Results : This retrospective study found 123 cases. The criteria for the average age of subjects were 54.8±13.9 years, with most subjects aged 50-59 years (28.5%). Most subjects were male (61%) with clinical symptoms being melena (89.4%). Fifty-four (43.9%) patients had a history of regular consumption of non-steroidal anti-inflammatory drugs (NSAIDs) and 8(7.3%) patients took herbal medicines. Based on endoscopic results, the most lesion abnormalities found were ulcers (47.2%), and the location of the most common abnormalities was found in gastric (61.8%). In 78 study subjects, a rapid urea test was also examined, in which 55 (44.7%) subjects had a positive *H. pylori* results.

Conclusions : Prevalence of *H. pylori* infection in GI Bleeding patients was based on a CLO rapid examination are most common in men, the age group 50-59 years, and in patients with complaint of Melena. Commond caused of bleeding was NSAIDs with common location in gaster.

Key words : GI Bleeding, Rapid Urea Test, *H. pylori*

PD-016

Prevalence of *Helicobacter pylori* among 1-69 years old Ardabil population in 2018: A high incidence area for gastric cancer

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Purpose : Although several studies are reporting an association between *H. pylori* and gastric cancer the natural history of *H. pylori* infection and gastric cancer is not completely understood. In theory, it would be possible to predict the future of gastric cancer burden in a given area if we know the current age-specific prevalence of *H. pylori* infection, but very few population-based *H. pylori* surveys have been conducted. Furthermore, very few have included children and they have used variable *H. pylori* detection methods. Therefore, Ardabil, a province in Iran with a very high incidence of GC participated in IARC's global ENIGMA studies.

Methods : In this cross-sectional study, 700 individuals aged 1-69 years residing in Ardabil were recruited. Subjects were randomly selected and equally stratified by gender and 5-year age groups. Participants were asked to answer an extensive risk factor questionnaire. In addition, blood, urine and stool samples were collected. The stool was used to detect *H. pylori* antigen using the HPS-Ag kit.

Results : A total number of 700 subjects were recruited with the average age of 34.4 ±19.7 years, of whom 351 (50.1%) were male and 349 (49.9%) female. Approximately half (50.1%) of subjects infected by *H. pylori* with a similar rate in both genders (Table 1). *H. pylori* infection rate was positively associated with age (Table 2), smoking and BMI ($P < 0.05$) while, parent's education had a negative association with *H. pylori* infection.

Conclusions : The prevalence of *H. pylori* in the Ardabil population aged 1 to 69 was 50.1%.

Key words : *Helicobacter pylori*, Gastric Cancer

Table 1: Prevalence of H. Pylori by Gender

HPS-Ag Gender	Positive		Negative		Unknown		P-Value
	No	%	No	%	No	%	
Male	179	51.0	164	46.7	8	2.3	0.94
Female	175	50.1	167	47.9	7	2.0	
Total	354	50.6	331	47.3	15	2.1	

Table 1: Prevalence of H. Pylori by Age Groups

HPS-Ag Age Groups	Positive		Negative		Unknown		P-Value
	No	%	No	%	No	%	
9-1	6	6.1	85	85.9	8	8.1	0.000
19-10	24	24.2	74	74.7	1	1.0	
29-20	41	42.3	54	55.7	2	1.2	
39-30	67	66.3	33	32.7	1	1.0	
49-40	66	66.7	32	32.3	1	1.0	
59-50	79	77.5	23	22.5	0	0.0	
69-60	71	68.9	30	29.1	2	1.9	
Total	354	50.6	331	47.3	15	2.1	

PD-017

The effect of Furazolidone-based and clarithromycin-based regimens in the treatment of *Helicobacter pylori* in a high gastric cancer incidence area

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Purpose : *Helicobacter pylori* eradication plays an important role in peptic ulcer treatment and gastric cancer (GC) prevention. However, anti-*H. pylori* treatment failure due to drug-resistance is of increasing concern. Furazolidone and Macrolides are still potent drugs in this regard. This study was designed to compare the therapeutic and side-effects of Furazolidone- with Clarithromycin-based drug regimen in *H. pylori* eradication.

Methods : Participants of a large-scale Ardabil GC prevention trial were evaluated *H. pylori* infection using *H. pylori* stool antigen (HPS-Ag). Patients aged 35-70 years with positive test were randomized into one of the following therapeutic groups: Amoxicillin 1000mg twice daily; Omeprazole 20mg twice daily; Bismuth Subcitrate 240mg twice daily for 14 days with either A: Furazolidone 200mg twice daily for 10 days (AOBF) or B: Clarithromycin 500 mg twice daily for 14 days (AOBC). Their response to treatment and side-effects were followed two months after treatment. (Supported by NIMAD)

Results : Of 11099 participants, 7735 (69.7%) had a positive HPS-Ag test. Of these, 1853 patients were treated, 1242 with regimen A (AOBF) and 611 with regimen B (AOBC). After re-evaluation in 2 months, 1078 (86.8%) of group A and 400 (65.5%) of group B had a response to treatment. Because of side-effects, 15 patients (1.2%) in group A and 9 in group B did not complete treatment. The most common side-effects in group A were headache, dizziness and bad taste in the mouth and in group B were nausea and vomiting.

Conclusions : Four-drug regimen consisting of Furazolidone is recommended for its higher response rate in Ardabil, a high-incidence GC region.

Key words : *Helicobacter pylori*, Gastric Cancer

PD-018

Modified quadruple- vs. bismuth-containing quadruple therapy as first-line treatment for *Helicobacter pylori* infection

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Purpose : To compare the efficacy and safety between modified quadruple therapy and bismuth-containing quadruple therapy as first-line eradication regimen for *Helicobacter pylori* infection.

Methods : This study was a multicenter, randomized-controlled, non-inferiority trial. Subjects endoscopically diagnosed with *H. pylori* infection were randomly allocated to receive modified quadruple (proton-pump inhibitor bid, amoxicillin 1 g bid, metronidazole 500 mg tid, bismuth subcitrate 300 mg qid [elemental bismuth 480 mg]; PAMB) or bismuth-containing quadruple therapy (proton-pump inhibitor bid, bismuth subcitrate 300 mg qid, metronidazole 500 mg tid, tetracycline 500 mg qid; PBMT) for 14 days. Rates of eradication success and adverse events were investigated. Antibiotic resistance was determined using the agar dilution method and DNA sequencing of the clarithromycin

resistance point mutations in the 23S rRNA gene of *H. pylori.*

Results : In total, 233 participants were randomized, 27 were lost to follow-up, and four violated the protocol. Both regimens showed an acceptable eradication rate in the intention-to-treat (PAMB: 87.2% vs. PBMT: 82.8%, P=0.37), modified intention-to-treat (96.2% vs. 96%, P>0.99), and per-protocol (96.2% vs. 96.9%, P>0.99) analyses. Non-inferiority in the eradication success of PAMB compared to those of PBMT was confirmed. The amoxicillin-, metronidazole-, tetracycline-, clarithromycin-, and levofloxacin-resistance rates were 8.3, 40, 9.4, 23.5, and 42.2%, respectively. Antimicrobial resistance did not significantly affect the efficacy of either therapy. Overall compliance was 98.1%. Adverse events were not significantly different between the two therapies.

Conclusions : Modified quadruple therapy is an effective alternative first-line treatment for the *H. pylori* infection in regions with high clarithromycin and metronidazole resistance.

Key words : *Helicobacter pylori*, Bismuth, Drug Resistance

PD-019

Low grade gastric mucosa-associated lymphoid tissue lymphoma : Clinicopathological factors associated with *Helicobacter pylori* eradication and tumor regression

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Purpose : Eradication of *Helicobacter pylori* is widely accepted as the initial therapy for low-grade gastric mucosa-associated lymphoid tissue (MALT) lymphoma. The aim of this study was to assess the remission and relapse rates of low-grade gastric MALT lymphoma after *H. pylori* eradication and to identify the clinical factors affecting remission.

Methods : We retrospectively analyzed 151 patients diagnosed with gastric MALT lymphoma from May 2003 to December 2018.

Results : Of the 151 patients, 112 (74.2%) had an *H. pylori* infection. Total regression rates with eradication was 90.2% (101/112) in *H. pylori*-positive patients and 55% (11/20) in *H. pylori*-negative patients. Age, sex, tumor location, endoscopic findings, and the severity of mononuclear lymphocytes were not related to achieving successful initial *H. pylori* eradication and remission. However, patients with a smaller *H. pylori* burden (p=0.030) and less neutrophil infiltration (p=0.003) were more likely to achieve a successful initial *H. pylori* eradication. *H. pylori* (p<0.001) and the burden (p=0.020) were significantly related to remission of MALT lymphoma.

Conclusions : The results show that *H. pylori* burden and neutrophil infiltration were inversely related to the success of the initial *H. pylori* eradication procedure and that the *H. pylori* burden was inversely related to the remission of MALT lymphoma.

Key words : Lymphoma, Mucosa-associated Lymphoid Tissue, *Helicobacter pylori*

PD-020

Clarithromycin resistance test before first-line treatment could improve the eradication rate of *Helicobacter pylori*

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Purpose : The eradication rate with standard triple therapy has gradually decreased recently due to the increased prevalence of clarithromycin (CAM) resistant *H. pylori*. The aim of this study is to evaluate the effectiveness of treatment with CAM resistance test.

Methods : We performed PCR-based sequencing to detect CAM resistance-associated mutations using biopsy specimen that were positive in the CLO test. Patients who did not have CAM resistance mutation were treated with standard triple therapy for 7days. And patients with CAM resistance mutation were treated with Bismuth contained quadruple therapy for 7days. Eradication was confirmed using the CLO test or 13C-labelled urea breath test. And then we estimated the success rate of *H.*

pylori eradication.

Results : A total 273 patients completed the evaluation of the success of eradication. 172 of 273 (62.5%) patients did not have any clarithromycin resistance mutation, 101 of 273 (37.5%) patients had clarithromycin resistance mutation. Of the 172 patients without mutation, 170 patients were treated with conventional triple therapy and 2 patient was treated with bismuth quadruple therapy because of side effect of fist line therapy. Except twelve patients treated with conventional triple therapy, all patients without mutation were successful in eradication. And 101 patients with mutation, patients were treated with bismuth quadruple therapy and all but three of them were eradicated. Overall intention-to-treat eradication rates were 94.5%

Conclusions : As compared with 75~80% success rate of conventional treatment of eradication, the 94.5% success rate with CAM resistance test is remarkable. Therefore, the patient-tailored treatment strategy through the CAM resistance test is promising.

Key words : *Helicobacter pylori*, Clarithromycin Resistance, Eradication Rate

PD-021

Less than 10% of *Helicobacter pylori*-seronegative subjects show true infection after seroconversion

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Purpose : Seroconversion and seroreversion of *Helicobacter pylori* occur during gastric cancer screening. This study aimed to determine the incidence and characteristics of seronegative subjects showing seroconversion in the follow-up tests.

Methods : Consecutive *H. pylori*-seronegative Koreans who underwent biannual gastric cancer screening based on gastroscopy and serum assays were included. Past infection was defined as successful eradication history or endoscopic findings suggesting past infection (gastric xanthoma, advanced atrophy or metaplastic gastritis). True *H. pylori* infection was confirmed based on endoscopic findings and Giemsa staining.

Results : During the mean follow-up of 57.7 ± 21.4 months, 61 (15.0%) of 407 seronegative subjects showed seroconversion. True infection was found in 6 (9.8%) of the 61 seroconverted subjects and in 2 seronegative subjects with positive Giemsa staining. All 8 infected subjects showed newly appeared spotty redness in the corpus. At the time of positive *H. pylori* test findings, the median serology titer was lower in 55 false-seropositive subjects (22.0 AU/mL, 12.1-99.3 AU/mL) than in 8 subjects with true infection (64.5 AU/mL, 6.2-200 AU/mL, p <0.001).

Conclusions : Seroconversion occurred in 3.3% of *H. pylori*-seronegative subjects per year; however, only 9.8% of the seroconverted subjects had true *H. pylori* infection. Most were false seropositivity with a relatively low serology titer. New appearance of spotty redness in the corpus indicates true infection.

Key words : *Helicobacter pylori*, Seroconversion, Seroreversion

PD-022

Comparative study of *Helicobacter pylori* eradication rates of bismuth-containing quadruple therapy versus modified quadruple therapy in Korea

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Purpose : To determine replacement therapy of conventional triple therapy for *Helicobacter pylori* eradication, this study compared the efficacy between bismuth-containing therapy and modified quadruple therapy.

Methods : Because this was a prospective, randomized, controlled, comparison study of PAMB therapy in comparison with PBMT, we prospectively collected samples during endoscopic examination from July 2018 through August 2019 in a single hospital each located in Gangwon and Gyeongii province of Korea. Between July and August 2019, subjects who underwent esophagogastroduodenoscopy and proven to have *H. pylori* infection were initially recruited in this study. The eligible subjects were randomly assigned to receive a 14-day PBMT or a

14-day PAMB therapy. Rates of eradication success and adverse events were investigated. Moreover, we investigated clarithromycin resistance point mutation and antibiotics culture resistance.

Results : In the ITT(Intention to treat) analysis, the *H. pylori* eradication rate was 82.8% (96/116; 95% CI: 76.7%-89.7%) in the PBMT group and 86.3%(101/117; 95% CI: 80.1%-92.5%) in the PAMB group. And in the PP(Per protocol) analysis, the eradication rate was 96.0%(96/100; 95% CI: 92.1%-99.8%) in the PBMT group and 96.2%(101/105; 95% CI: 92.5%-99.9%) in the PAMB group. There was statistically no significant difference in the *H. pylori* eradication rate between PAMB and PBMT, in both ITT and PP analysis

Conclusions : Modified quadruple therapy is considered as a reasonable alternative replacement therapy for conventional triple therapy in areas with high clarithromycin and metronidazole resistance.

Key words : *Helicobacter pylori*, Eradication, Drug Resistance

PD-023

The current antibiotic resistance and the role of MIC levels of resistance to antibiotics in *Helicobacter pylori* eradication in Korea

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Purpose : As the prevalence of antibiotic resistance is increasing, the effectiveness of *Helicobacter pylori* (*H. pylori*) eradication is gradually declining. In this study, we evaluated antibiotic resistance of *H. pylori* how to affect antimicrobial resistance the cure rate of *H. pylori* infection.

Methods : Patients who revealed *H. pylori* infection were prospectively enrolled from June 2016 to April 2019 in Daegu and Kyungpook province. The patients' clinical data and *H. pylori* culture and antibiotic susceptibility tests were evaluated.

Results : The antibiotic resistances were increased in 1st eradication failure and 2nd and more eradication failure group (Table 1). In CLA resistance group (n=33), 13 patients were treated with Clarithromycin containing regimens.Of them, seven patients undergone standard triple therapy containing CLA, two of them success eradication, and MIC of them were 8~16ug/ml, 16~32ug/ml each. And Six patients were treated with concomitant regimen, four of them succeed eradication and two of them failed. In MET resistance group (n=33), 12 patients were treated with MET containing regimen. Two of them were treated with Metronidazole containing triple therapy and 1 of them achieve eradication and 1 of them failed (MIC were 16~32 ug/ml and 16~32 ug/ml each). 6 of them were treated with concomitant regimen and four of them achieved eradication. (MIC of 3 were 16~32 ug/ml, and one were over 32 ug/ml)

Conclusions : The antibiotic resistance was increased as failure of *H. pylori* eradication and increased MIC affects the failure of *H. pylori* eradication.

Key words : *Helicobacter pylori*, Antibiotic Resistance, Treatment

Table 1. The results of antibiotic resistance based on culture and MIC test

	Antibiotic resistances (%)				
	AMX	CLA	MET	TC	LEV
Prevalence of *H. pylori* eradication failure group (n=81)	0 (0%)	19 (23.5%)	22 (27.2%)	2 (2.5%)	23 (28.4%)
1st eradication failure group (n=7)	0 (0%)	6 (85.7%)	4 (57.1%)	0 (0%)	3 (42.9%)
2nd or more eradication failure group (n=9)	1 (0.1%)	8 (88.9%)	7 (77.8%)	1 (11.1%)	4 (44.4%)

H. pylori, *Helicobacter pylori*; AMX, amoxicillin; CLA, clarithromycin; MET, metronidazole; TC, tetracycline; LEV, levofloxacin

PD-024

Eradication rates for *Helicobacter pylori* with standard triple and quadruple therapy based on 23S ribosomal RNA point mutation

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Purpose : The point mutation (A2143G and A2142G) in 23s ribosomal RNA gene have been associated with *Helicobacter pylori* (*H. pylori*) clarithromycin resistance. This study aimed to investigate the eradication rate of standard triple and quadruple therapy according to types of point mutation.

Methods : A total of 1,428 of patients who underwent esophagogastroduodenoscopy and *H. pylori* polymerase

chain reaction (PCR) were retrospectively enrolled between June 2014 and September 2019. Of these, 464 patients were identified with *H. pylori* infection. Point mutation test using dual-priming oligonucleotide-based multiplex PCR were conducted. Of the patients whose point mutation tests were negative, 287 patients received standard therapy and 2 patients received quadruple therapy. Of those point mutation tests were positive, 37 patients received standard therapy and 138 patients received quadruple therapy. Urea breath test and CLO test were used to confirm the status of *H. pylori* 6 weeks later.

Results : *H. pylori* infection was eradicated in 213 of 257 patients (89.9%) with negative point mutation, 13 of 13 patients (100%) with A2142G mutation and in 113 of 145 patients (77.9%) with A2143G or double mutation. The quadruple therapy achieved a higher eradication rate than standard therapy in A2143G mutation (difference, 66.3 percentage points; $P < 0.001$). Meanwhile, patients with A2142G mutation showed high eradication rate in both standard and quadruple therapy.

Conclusions : Depending on the types of point mutation, eradication rate shows a difference. Unlike A2142G mutation, A2143G mutation is associated with low eradication rate. The quadruple therapy has higher eradiation rate than standard therapy in A2143G mutation.

Key words : *Helicobacter pylori*, Point Mutation, Standard Triple and Quadruple Therapy

Table 1.

Success rate of initial therapy	Negative point mutation n/N (%)	Positive point mutation A2142G, n/N (%)	Positive point mutation A2143G or Double*, n/N (%)
Per protocol			
Standard triple therapy†	229/255 (89.8)	4/4 (100.0)	8/31 (25.8)
Quadruple therapy‡	2/2 (100.0)	9/9 (100.0)	105/114 (92.1)
Total	231/257 (89.9)	13/13 (100.0)	113/145 (77.9)
Intention to treat			
Standard triple therapy†	229/287 (79.8)	4/4 (100.0)	8/33 (24.2)
Quadruple therapy‡	2/2 (100.0)	9/10 (90.0)	109/128 (85.2)
Total	231/289 (79.9)	13/14 (92.9)	117/161 (72.7)

*Double: both A2142G and A2143G
†Standard triple therapy: proton pump inhibitor, clarithromycin 500 mg, and amoxicillin 1g twice daily for 7 days
‡Quadruple therapy: proton pump inhibitor twice daily, metronidazole 500 mg three times a day, bismuth subcitrate 300 mg four times a day, and tetracycline 500 mg four times a day for 7 days or 14 days

PD-025

Comparative study of *Helicobacter pylori* eradication rates with hybrid therapy and concomitant therapy

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Purpose : The eradication rate of the conventional triple therapy for *Helicobacter pylori* (*H. pylori*) has decreased in recent years because of the increase in antibiotic resistance. To increase the eradication rate, alternative regimens such as sequential, concomitant and hybrid therapies have been tried. We compared hybrid therapy with concomitant therapy as the first-line regimen for *H. pylori*.

Methods : *H. pylori*-infected patients in Korea University Ansan Hospital were randomly assigned to either concomitant or hybrid regimens. The concomitant regimen consisted of standard dose of proton pump inhibitor (PPI), 1 g of amoxicillin, 500 mg of clarithromycin, and 500 mg metronidazole, twice daily for 10 days. The hybrid regimen consisted of a 5-day dual therapy (standard dose of PPI and 1 g of amoxicillin, twice daily) followed by a 5-day quadruple therapy (PPI, 1 g of amoxicillin, 500 mg of clarithromycin, and 500 mg of metronidazole, twice daily).

Results : Eradication rates for hybrid and concomitant therapy were 74.2% (46/62) and 67.7% (42/62) in the intention-to-treat analysis, and 88.5% (46/52) and 82.4% (42/51) in the per protocol analysis. In the ITT and PP analysis, there was no statistically significant difference in the eradication rates between the two groups. (Table1,Figure1) Adverse events were complained by 67.7% in the hybrid group, and 59.7% in the concomitant group, but there was no statistical difference. (Table2)

Conclusions : As compared with concomitant therapy, hybrid therapy offered similar efficacy and adverse events. Both hybrid therapy and concomitant therapy could be an option of first-line treatment for *H. pylori* in areas with high antibiotics resistance.

Key words : *Helicobacter pylori*, Hybrid Therapy, Concomitant Therapy

Table 1. Eradication rates of the hybrid and concomitant therapies

	Hybrid	Concomitant	P
Intention-to-treat analysis			
Eradication rate	46/62 (74.2%)	42/62 (67.7%)	0.429
Per-protocol analysis			
Eradication rate	46/52 (88.5%)	42/51 (82.4%)	0.380

Figure 1. Eradication rates of the hybrid and concomitant therapies

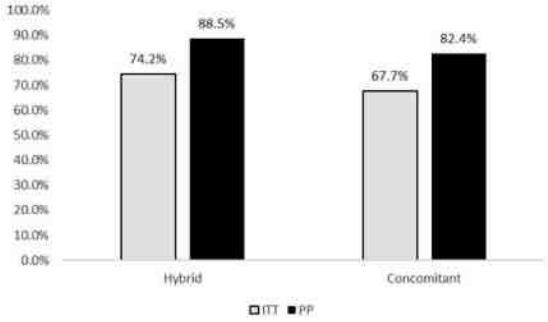

Table 2. Adverse events associated with the hybrid and concomitant therapies

	Hybrid (n = 62)	Concomitant (n = 62)	P
Bitter taste	21 (33.9%)	21 (33.9%)	1.000
Anorexia	1(1.6%)	0(0%)	1.000
Loose stool/ Diarrhea	8 (12.9%)	11 (17.7%)	0.455
Nausea	3 (4.8%)	3 (4.8%)	1.000
Abdominal discomfort	6 (9.7%)	2 (3.2%)	0.273
Fatigue	1(1.6%)	0(0%)	1.000
Dizziness	1 (1.6%)	3 (4.8%)	0.619
Edema	1 (1.6%)	0 (0%)	1.000
Headache	1 (1.6%)	0 (0%)	1.000
	42/62 (67.7%)	37/62 (59.7%)	0.350

PD-026

Risk factors for loss to follow-up exmination in *H. pylori* eradication therapy since insurance criteria expansion from 2018 in Korea: A single center study of 765 cases

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Purpose : As insurance criteria have been expanded since 2018 in Korea, there has been a massive increase in *Helicobacter pylori* eradication therapy. We analyzed risk factors for loss to follow-up for over 1 year after receiving *H. pylori* eradication therapy.

Methods : We examined people who received *H. pylori* eradication therapy under expanded insurance criteria at a single health screening center in Pohang, Korea between January and December of 2018. Among 428 patients who did not return for follow-up test for over 1 year, 362 patients received a phone call. All responders were asked following questions which include; whether they had received a follow-up test at other hospital, the reason why they did not come for the follow-up test, and whether they completed the course of eradication therapy.

Results : Among 362 patients, only 8 patients(2.2%) voluntarily received a follow-up test at other hospitals. On the other hand, 32 patients(8.8%) incidentally received a follow-up test. The remaining 322 patients(89.0%) did not identify the eradication results for over 1 year. The main risk factor for loss to follow up was patient's lack of interest(81.4%, 262/322; there was no particular reasons and patients considered that physicians would check it during next screening). And incomplete course of eradication therapy was the second major risk factor(15.8%, 51/322).

Conclusions : The two major risk factors for loss to follow-up were patient's lack of interest and drug intolerance. At the start of *H. pylori* eradication therapy, physician's encouragement and providing sufficient information would probably improve the rate of follow-up test and tolerability of *H. pylori* eradication drugs.

Key words : *Helicobacter pylori*, Eradication, Loss To Follow Up

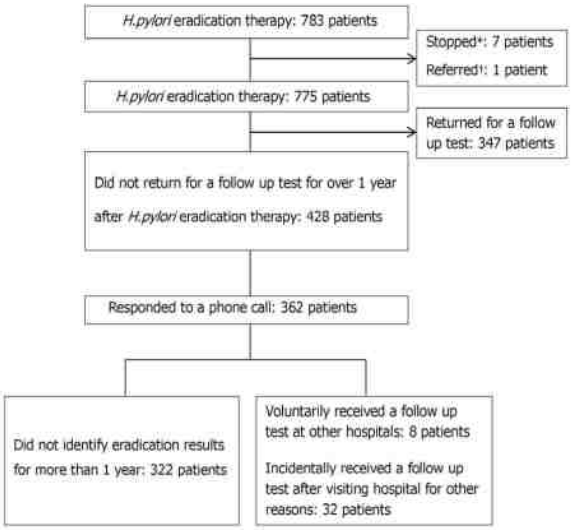

Fig. 1.
Results of patients who received *H.pylori* eradication therapy during 2018 in Korea.
Exclusion criteria includes stopped(*) and referred(†) cases. 7 patients stopped taking drugs due to side effects and notified doctor of their symptoms. And one patient was referred to another hospital after receiving a diagnosis of gastric mucosa-associated lymphoid tissue(MALT) lymphoma.

Table 1.
Number of patients who did not return for a follow-up test for over 1 year according to the treatment regimen.

Ordinal number	First-line*	Second-line**	Third-line†
Patients who did not return to hospital (n=428) / Patients who received eradication therapy (n=775)	386/678 (56.9%)	38/92 (41.3%)	4/5 (80%)

*Proton pump inhibitor (PPI)-based triple therapy for 7 days
**Concomitant quadruple therapy for 7 or 10 or 14 days
†Levofloxacin based triple therapy for 7 or 14 days

Table 2.
Reasons for not receiving a follow-up test for over 1 year

Reasons for not receiving a follow-up test	Total(n=322)
Lack of interest*	262(81.4%)
Incomplete course of eradication therapy**	51(15.8%)
Misunderstanding about follow-up test	6(1.9%)
Long distance travel required	1(0.3%)
Pregnancy after eradication therapy	1(0.3%)
Afraid of results after 3rd line eradication therapy	1(0.3%)

*Lack of interest means patients who had no particular reason and considered that physicians would check it during next screening.
**Incomplete course of eradication therapy means patients who did not complete the course of *H.pylori* eradication therapy.

PD-027

The prevalence of antimicrobial resistance of *Helicobacter pylori* in Korea from 2017 to 2019: A single center study

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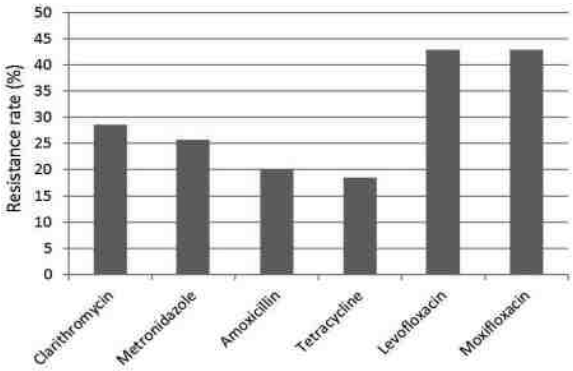
Purpose : Antimicrobial resistance undermines the efficacy of *Helicobacter pylori* eradication therapy. The aim of this study was to estimate the recent prevalence of antimicrobial resistance of *H. pylori* isolates in Korea.

Methods : A total of 164 patients who underwent upper endoscopy were prospectively enrolled at Chung-Ang University Hospital from May 2017 to December 2019. *H. pylori* strains were isolated from the gastric body and antrum of the patients with positive *H. pylori* test results. The minimum inhibitory concentrations (MICs) of antibiotics were determined by the serial 2-fold agar dilution method. The breakpoint for antimicrobial resistance was determined according to EUCAST standards.

Results : The prevalence of *H. pylori* infection was 50.0% (82/164). The culture success rate for *H. pylori* was 85.4% (70/82). The resistance rates for clarithromycin, metronidazole, amoxicillin, tetracycline, levofloxacin, and moxifloxacin were 28.6%, 25.7%, 20.0%, 18.6%, 42.9%, and 42.9% respectively. Among 52 patients with successful isolation of *H. pylori* strains from both the antrum and the body, 26.9% (14/52) patients showed discordant antimicrobial resistant profiles between these anatomic areas. The multidrug resistance rate was 25.2% (30/70) among amoxicillin, clarithromycin, metronidazole, tetracycline, and quinolone and 11.2% (16/70) among four of these major antibiotics except for quinolone. Dual resistance to clarithromycin and metronidazole was confirmed in 8.6% (6/70).

Conclusions : The prevalence of clarithromycin resistance is high (>15%), whereas the prevalence of dual resistance to clarithromycin and metronidazole is not high in Korean *H. pylori* strains.

Key words : *Helicobacter pylori*, Antibiotic Resistance, Korea



	Subjects with successful *H. pylori* culture (n = 70)
Resistant to 5 drugs	1 (1.4 %)
Resistant to 4 drugs	2 (2.9 %)
Resistant to 3 drugs	10 (14.3 %)
Resistant to 2 drugs	17 (24.3 %)
Resistant to 1 drug	20 (28.6 %)

PD-028

Efficacy and cost-effectiveness of *Helicobacter pylori* eradication: Comparison of tailored therapy based on clarithromycin resistance and concomitant therapy

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Purpose : The *Helicobacter pylori* (*H. pylori*) eradication rate using conventional triple therapy has decreased due to clarithromycin resistance. Concomitant therapy or tailored therapy based on dual priming oligonucleotide (DPO)-based multiplex polymerase chain reaction (PCR) is considered as alternative first-line eradication strategies. We aimed to evaluate the eradication rate and cost-effectiveness of concomitant and tailored therapy.

Methods : Data from *H. pylori*-positive patients were collected between January 2017 and June 2019. The tailored therapy group underwent DPO-PCR testing; If DPO-PCR positive, 7-day bismuth-containing quadruple regimen were given, and if negative, 14-day conventional triple regimen was prescribed. In concomitant therapy group, 14-day concomitant regimen was prescribed. The cost-effectiveness of evaluated according to the average cost per patient and the incremental cost-effectiveness ratio.

Results : A total of 200 patients were allocated to the concomitant therapy group and 100 patients to the tailored therapy group. The eradication rate of first-line regimen was marginally higher in tailored therapy group than concomitant therapy group (96/100, 96.0% vs. 179/200, 89.5%, P=.055). The average costs per patient for tailored therapy were ₩591562.56 and ₩573304.30 for first-line and second-line treatments, respectively. Compared with concomitant therapy, the incremental cost-effectiveness ratios of tailored therapy were -₩31118.44 and -₩49376.70 per patient for first-line and second-line treatments, respectively.

Conclusions : Tailored therapy using DPO-PCR shows tendency of higher eradication rate cost-effectiveness compared with concomitant therapy. Larger scale, randomized trial may be necessary in the future.

Key words : *Helicobacter pylori* Eradication, Effectiveness And Cost-effectiveness, DPO-PCR

PD-029

Clinical application of loop-mediated isothermal amplification method on *Helicobacter pylori* diagnosis and detection of clarithromycin resistance: Preliminary study in comparison with rapid urease test

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Purpose : Loop-mediated isothermal amplification (LAMP) is a technology to rapidly amplify the target nucleic acid using four specific primers at constant temperature. The Isopollo® *H. pylori* & ClaR is a reagent for detecting *Helicobacter pylori (H. pylori)* and two point mutations(2143G, 2182C) involved in clarithromycin resistance with the LAMP assay. In this study,

we evaluated the clinical feasibility in detecting *H. pylori* and two point mutation of clarithromycin resistance using Mmaxpress® DNA kit HS2 that is a direct lysis buffer, without nucleic acid extraction.

Methods : Consecutive patients who had visited endoscopy center for therapeutic or diagnostic endoscopy were enrolled from 12th November 2019 to 9th December 2019. True *H. pylori* positivity was defined if more than two tests were positive among biopsy with H&E stain, IgG antibody in serum, RUT and LAMP assay.

Results : A total 30 patients were enrolled in this study. A true *H. pylori* positivity was detected in 17 patients. Serum antibody, Isopollo® *H. pylori* & ClaR, and RUT was positive in 24 (80%), 15 (50%) and 13 (43%) patients, respectively. The sensitivity and specificity of the LAMP assay was 88% and 100%, respectively. The sensitivity and specificity of the RUT was 76% and 100%, respectively. The positive and negative predictive value for the LAMP assay was 100% and 87%, respectively. The clarithromycin resistance rate was 53% (N=8) and most of them showed 2182C point mutation (88%, N=7).

Conclusions : The LAMP assay for the diagnosis of *H. pylori* infection and clarithromycin resistance detection is accurate and feasible to apply in clinical practice.

Key words : *Helicobacter pylori*, Diagnosis, Resistance

PD-030

Can DPO-PCR based tailored-therapy increase the eradication rate of *Helicobacter pylori*?

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Purpose : Proton pump inhibitor (PPI)-based standard triple therapy (STT, PPI-clarithromycin-amoxicillin) for *Helicobacter pylori (H. pylori)* eradication regimen shows lower treatment success rate recently. Dual Priming Oligonucleotide – based multiplex polymerase chain reaction (DPO-PCR) can be used to detect A2142G and/or A2143G point mutations of *H. pylori* causing clarithromycin resistance (CAM-R). We compared the eradication rate of *H. pylori* between traditional method (Warthin-Starry silver stain) followed by PPI-based STT and tailored-therapy by DPO-PCR.

Methods : A total of 416 *H. pylori*-infected patients were evaluated in Eunpyeong St. Mary's Hospital, Korea, between April 2019 and December 2019. DPO-PCR performed in tailored-therapy group. The CAM-R negative patients (who showed no A2142G and/or A2143G point mutations) were treated with PPI-based STT for 7-14days. CAM-R positive patients were treated with bismuth-containing quadruple therapy (PPI-bismuth-metronidazole-tetracycline). Eradication success was defined as a negative 13C-urea breath test.

Results : A total of 257 patients were diagnosed *H. pylori* infection by traditional method and treated with PPI-based STT as first-line and 159 patients were allocated to the tailored-therapy group (Fig.1). There was no significant difference of *H. pylori* eradication rate between traditional group and tailored-therapy group in the intention-to-treat analysis (67.3% vs 88.0%, p=0.081). The tailored-therapy group showed significant increase of *H. pylori* eradication success rate than traditional therapy group in the per-protocal analysis (69.5% vs 92.7%, p=0.043), respectively. Clarithromycin resistance ratio by DPO-PCR was 20.8% (33/159), A2142G mutation ratio was 21.67%(5/159) and A2143G mutation ratio was 78.33% (28/159). Adverse events were higher in tailored-therapy group (9.7% vs 16.32%, p=0.039).

Conclusions : DPO-PCR based tailored-therapy is more effective than traditional therapy.

Key words : DPO-PCR, *Helicobacter pylori*, Clarithromycin Resistance

PD-031

The effect of eupatilin therapy on eradication rates and side effects during *Helicobacter pylori* eradication

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Purpose : Eupatilin may improve the effectiveness of *Helicobacter pylori* (*H. pylori*) eradication by inhibiting the release of leukotrienes from gastric mucosal cells. This study was performed to evaluate whether the addition of eupatilin to proton pump inhibitor (PPI)-based triple therapy increases the eradication rates and decreases side effects during eradication therapy.

Methods : We reviewed 59 patients who were infected with *H. pylori* and treated with triple therapy plus eupatilin or not. The triple therapy consisted of lansoprazole 30mg b.i.d., clarithromycin 500 mg b.i.d., and amoxicillin 1 g b.i.d. for 7 days. The patients received eupatilin or not for 14 days starting from the first day of triple therapy. Eradication rate was obtained by urea breath test performed 4 weeks after completion of triple therapy. Adverse events were evaluated by filling symptom questionnaires after 7, 14, 21 and 28 days of the treatment.

Results : 32 patients were treated with eupatilin(Group A, triple therapy plus eupatilin) and another 27 patients without eupatilin (Group B, triple therapy). *H. pylori* eradication rate was 68.8%(22 of 32) in group A and 55.6%(15 of 27) in group B. There was no noticeable difference in side effect rates between both groups. The side effect rates after 4 weeks were decreased compared with those after 1 week. Most adverse events were mild to moderate in intensity.

Conclusions : The addition of eupatilin to triple therapy might be effective in boosting eradication rates than without eupatilin. Even though the side effects were reduced after treatment, there was no significant relationship between both groups.

Key words : *Helicobacter pylori*, Eupatilin, Eradication

PD-032

Empiric versus clarithromycin-resistance-guided therapy for *Helicobacter pylori* based on polymerase chain reaction results in patients with gastric neoplasms or gastric MALT lymphoma: A randomized controlled trial

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Purpose : We investigated to compare the effect of empirical therapy versus clarithromycin resistance-guided tailored therapy (tailored therapy) for eradication of *Helicobacter pylori*.

Methods : In this prospective, single center, open-label randomized controlled trial, we enrolled 72 patients with *H. pylori* infection from January 2019 through June 2019 in Korea. The patients were randomly assigned to both groups received empirical (n=36) or tailored therapy (n=36). Empirical therapy was defined as triple therapy with esomeprazole, amoxicillin, and clarithromycin for 10 days irrespective of clarithromycin resistance. Tailored therapy was triple or quadruple therapy with esomeprazole, metronidazole, tetracycline, and bismuth for 10 days based on genotype markers of resistance determined by gastric biopsy. Resistance-associated mutations in 23S rRNA were confirmed by multiplex polymerase chain reaction. Eradication status was assessed by 13C-urea breath test and the primary outcome was eradication rate.

Results : *H. pylori* was eradicated in 27 (75.0%) patients given empirical therapy and 32 (88.9%) patients treated with tailored therapy (P=0.136) in intention-to-treat analysis. In per-protocol analysis, eradication rate was 97.0% and 81.8% in tailored versus empirical group (P=0.046). While clarithromycin-resistant *H. pylori* was eradicated in 3/9 (33.3%) with empirical therapy, it was treated in 11/12 (91.7%) with tailored therapy (P=0.009). There was no difference in compliance between two groups. Rate of adverse events of tailored group was higher than that of empirical group (P=0.036) since quadruple therapy had more side effects than triple therapy (P=0.001).

Conclusions : Tailored therapy based on PCR is a good alternative to increase eradication rate in a region of high prevalence of clarithromycin resistance.

Key words : Eradication Rate, *Helicobacter pylori*, Clarithromycin Resistance–guided Tailored Therapy

PD-033

Predictors to develop side effects during bismuth-based quadruple therapy as first-line eradication for *Helicobacter pylori* infection patients

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Purpose : Side effects during bismuth based quadruple therapy often lead to patients'incompliance, and even eradication failure. However there is limited data which factors are associated with side effects during bismuth based quadruple therapy among patients in *Helicobacter pylori* infection.

Methods : We retrospectively reviewed the medical records of the patients who confirmed *Helicobacter pylori* infection and received bismuth based quadruple therapy as the first line eradication regimen between May 2016 and June 2018. Type of side effects includes abdominal discomfort, nausea/vomiting, diarrhea/constipation, dyspepsia, general weakness, and taste disturbance. According to the patients' reported side effects, patients were divided into two groups; no side effect group and side effect group. Univariate and multivariate analysis were done to confirm which factors were associated with the side effect development during bismuth based eradication therapy.

Results : After exclusion of patients who did not follow up after taking drugs, finally 184 patients were enrolled. In univariate analysis, female gender were more prevalent in side effect group (20.9%, 18/86 vs 8.2% , 8/98, P=0.01) and body mass index were lower in side effect groups (23.7 ± 2.9 vs 24.0 ± 3.3, P=0.06). In multivariate analysis, female gender (OR 2.9 (95% CI 1.2-7.3), P<0.01) was the independent risk factors to develop side effects during therapy.

Conclusions : Female gender is the only determinant factors to develop side effects during bismuth based quadruple therapy. When prescribing quadruple eradication regimen as first line therapy to female patients, it is necessary for clinicians to educate more carefully regarding side effects during treatment.

Key words : Predictors, Side Effects, Bismuth Based Quadruple Therapy

PD-034

Quantification of *H. pylori* density and detection of mutations associated with clarithromycin and levofloxacin resistance in gastric biopsies using TaqMan quantitative PCR assay

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Purpose : Detection of *H. pylori* by conventional methods is hindered by the presence of low density of bacterial cells in gastric samples. In this study we developed a real-time quantitative PCR to detect *H. pylori* and resistance mutations in gastric biopsies.

Methods : A total of 571 gastric biopsies were tested. *H. pylori* detection was determined by conventional methods. qPCR was performed for detection of *ureA H. pylori* and mutations associated with clarithromycin and levofloxacin resistance.

Results : *H. pylori* was detected in 14.9% of gastric biopsies by conventional methods, while qPCR detected *H. pylori* in 23.8% of the biopsies. qPCR assay for detection of *H. pylori* showed 96.5% sensitivity, 88.9% specificity and 8.69 likelihood ratio positive. Among the 136 positive samples 74.3%, 19.1% and 6.6% had low (<0.5), medium (10-99) and high (≥100) copy number of bacterial cells, respectively. Clarithromycin resistance was detected in 20.6% of the biopsies with 75% of the mutations were A2143G. Both wild-type and mutations were detected in 6 samples. Levofloxacin resistance was detected in 11.8% of the biopsies and mutations N87I, N87K, D91N and D91Y were identified in 2, 9, 2 and 2 samples, respectively. One sample had both N87K and D91Y mutations.

Conclusions : In conclusion, this study showed that qPCR able to identify *H. pylori* in majority of samples with low copy number of *H. pylori* DNA and mixed infection of wild-type and resistant DNA. qPCR is useful for monitoring the evolution of clarithromycin and levofloxacin resistance among *H. pylori* strains and allows rapid resistance assessment for treatment management

Key words : *Helicobacter pylori*, Quantitative PCR, Mutations

PD-035

Helicobacter pylori and T helper type 1 (Th1) cells: In-vitro study and gene expression analyses

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Purpose : T helper type 1 (Th1) cells are a lineage of CD4+ effector T cell that promotes cell-mediated immune responses. It involves in the gastric inflammatory response during *H. pylori* infection and produces cytokines including interferon-gamma (IFN-γ) and interleukin 18 (IL-18). In this study, we investigated the expression of IFN-γ and IL-18 of different *H. pylori* strains from different sources *in-vitro* co-cultured with human stomach epithelial cells.

Methods : *H. pylori S3, S5, C7 and C8* strains from human and cockroaches were inoculated into AGS cells for 6h. The expression of IFN-γ and IL-18 were conducted using RT2 Profiler PCR array. Fold differences in the gene expression were determined using the 2-ΔΔCt method.

Results : IFN-γ was significantly elevated in the AGS cells after infected with different *H. pylori* strains with a range of 4.70 to 27.48 fold-regulation. Similarly, IL-18 also increased in the infected AGS cells with a range of 7.68 to 30.55 fold-regulation. Interestingly, *H. pylori S5* strain isolated from the gastric biopsy showed the highest expression of IFN-γ and IL-18. This suggests that *H. pylori S5* probably the most invasive strain. Moreover, Th1 proliferation in the AGS infected by *H. pylori* resulting in enhanced secretion of IFN-γ and IL-18 cytokines that regarded as pro-inflammatory in facilitating type 1 responses.

Conclusions : Higher expression of the IFN-γ and IL-18 determined in this study postulates that these pro-inflammatory cytokines play important roles in enhancing the severity of gastric inflammation and enable the bacteria to evade the immune response.

Key words : *Helicobacter pylori*, IFN-γ, Il-18

PD-036

Effect of *Helicobacter pylori* eradication therapy on the *lactobacillus*

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Purpose : To evaluate intestinal *Lactobacillus* of patients with *H. pylori* infection pre-and post-eradication.

Methods : The case group consists of 80 dyspeptic patients with *H. pylori* positive. Subjects were divided into two groups. The first group (40 patients) received Clarithromycin based triple treatment (CBTT), and the second group (40 patients) received Bismuth based quadruple treatment (BBQT) for 10 days according to guideline of Maastricht V/Florence Consensus Report. Stool samples were collected 2 times, the first before starting treatment (day 0) and the second 1 day after finishing treatment (day 11) to analyze *Lactobacillus*. The *Lactobacillus* were isolated from stool samples by using MRS agar with acetic acid (Hardydiagnostic, USA) and were incubated at 370C for 48-72 hours in anaerobic conditions. Colonies of the *Lactobacillus* species were calculated by ProtoCol3.

Results : In patients with *H. pylori* infection, the colony forming units of *Lactobacillus* before clarithromycin based triple treatment were 1140.1×104/CFU and after treatment decreased to 697.7×104/CFU ($P<0.001$). Whereas before bismuth based quadruple treatment it was 1287.1×104/CFU and after treatment decreased to 817.3×104 /CFU ($P<0.001$). The colony forming units of *Lactobacillus* were 697.7×104/CFU after CBTT, and 817.3×104 /CFU after BBQT respectively ($P>0.05$).

Conclusions : The colony forming units of *Lactobacillus* in fecal was decreased after both CBTT and BBQ treatments. However, it was decreased more in CBTT group than BBQT.

Key words : *Helicobacter pylori, Lactobacillius*, Eradication Therapy

PD-037

Rate of *Helicobacter pylori* eradication by levofloxacin-based and clarithromycin-based sequential therapy regimens at tertiary care hospital

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Purpose : The aim of the current study is to find the rate of *H. pylori* eradication by Levofloxacin based and Clarithromycin based sequential therapy regimens at tertiary care hospital

Methods : All in patients who fulfilled the inclusion criteria in the Department of Gastroenterology, Liaquat National Hospital, Karachi were included in the study. After taking informed written consent history, clinical examination, upper GI endoscopy was performed levofolxacin and clarithromycin based sequential *H. pylori* eradication was given. Eradication was checked by performing stool for *H. pylori* eradication. All the collected information was entered in the prescribed Performa.

Results : A total 254 patients were included in our study. 106 (41.7%) were female and 148 (58.2%) were male. Mean duration of dyspepsia was 5.03±1.24 months. Eradication rate was 95% with levofloxacin based sequential therapy and 85% with clarithromycin based regime.

Conclusions : The eradication rate with levofloxacin sequential therapy was better than clarithromycin based regim, could be due to high resistance in our population so it is suggested to prefer levofloxacin based regime in our day to day practice.

Key words : *H. pylori* Infection, Levofloxacin, Sequential Therapy, Clarithromycin

PD-038

Comparing yield of fecal antigen testing with endoscopic gastric mucosal biopsy for detection of *H. pylori* in dyspeptic patients

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Purpose : There are several invasive and non-invasive techniques used to diagnose *H. pylori* infection. Invasive methods require biopsy samples from stomach and can be tested by histology, rapid urease test (RUT), microbiological culture and polymerase chain reaction (PCR) whereas non-invasive tests include stool antigen test, serology and urea breath test (UBT). Purpose of our study was to determine the diagnostic accuracy of *H. pylori* fecal antigen detection taking endoscopic biopsy as gold standard in dyspeptic patients (18-65 years).

Methods : This is descriptive, cross-sectional study, conducted in Gastroenterology Unit, Holy Family Hospital, Rawalpindi from 30th April 2019 to 30th October 2019. A total of 85 patients irrespective of gender having symptoms of dyspepsia were included. Patients having gall stones, celiac disease, pancreatic disease, DM, thyroid disease and patients on PPI or H2 receptors. Patients diagnosed for pancreatitis, cholecystitis, HBV or HCV positive cases of CLD, malignancy or ischemic heart disease or being pregnant were excluded.

Results : Fecal antigen detection found that 42 were true positive and 4 were false positive. Among 39, fecal antigen negative patients, 4 (false negative) had *H. pylori* on endoscopic biopsy whereas 35 (true positive) had no *H. pylori* involvement on endoscopic biopsy (P=0.0001). Overall sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of *H. pylori* fecal antigen detection taking endoscopic biopsy as gold standard in dyspeptic patients was 91.30%, 89.74%, 91.30%, 89.74% and 90.59% respectively.

Conclusions : This study concluded that diagnostic accuracy of *H. pylori* fecal antigen detection in dyspeptic patients is quite high.

Key words : *H. pylori* Infection, Rapid Urease Test, Endoscopic Biopsy

PD-039

Efficacy assessment of urea breath test in dyspeptic *Helicobacter pylori* sero-positive patients

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Purpose : Epigastric pain, burning and gastric bloating is termed as dyspepsia. Dyspepsia is caused by multiple reasons. The most frequently reported reason is *Helicobacter pylori* infection. *H. pylori* infects more than 50% people globally with more frequent in developing countries including Pakistan. Diagnosis of *H. pylori* infection can be carried out by number of method but is often challenging. The present study was designed to find the efficacy of urea breath test (UBT) in clinically diagnosed *H. pylori* infection and compare with sero-positive results by immnochromatoghraphy.

Methods : Twelve hundred and ten clinically diagnosed *H. pylori* infected dyspeptic participant were included in the study. Serum was collected after drawing three ml blood and tested for *H. pylori* antibodies by immunochromatoghrapy. UBT was also performed for all the participant of the study.

Results : All the participant of the study was positive for *H. pylori* infection on ICT method but out of 1210 patients tested for H pylori using UBT 741 (61.23%) were positive for active *H. pylori* infection. The remaining 145 (40.62) were negative

Conclusions : Urea breath test is a good noninvasive test for detection of active *H. pylori* infection presenting with dyspepsia and is comparable within dyspeptic subgroups.

Key words : Dyspepsia, Urea Breath Test, *Helicobacter pylori* Infection, Immnochromatoghraphy

Table: Gender and age wise status of UBT test

		Positive		Negative		Total
Gender	Male	439	58.92%	306	41.07%	745
	Female	302	64.94%	163	35.05%	465
Age Group	≤ 45	649	87.58%	384	81.87%	1033
	≥ 45	92	12.41%	85	18.12%	177

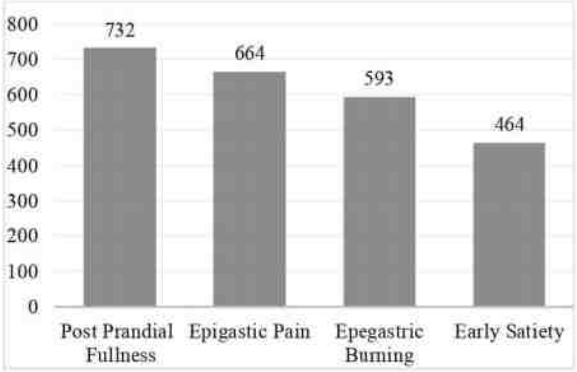

Figure 1: Symptoms wise distribution of the participant of the study

PD-040

Comparison of 7-day versus 14-day vonoprazan triple regimen in *H. pylori* infection: A retrospective analysis

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Purpose : A novel drug, named vonoprazan was found to be effective for acid suppression. This new class of drug is called potassium-competitive acid blocker that competitively inhibits the potassium ion to hydrogen-potassium ATPase pump. Meta-analyses have shown the efficacy of vonoprazan-based therapy to be superior to that of proton pump inhibitor-based regimen for eradication of *H. pylori*. This study will compare the eradication rates of *H. pylori* by increasing the duration from 7 to 14 days.

Methods : This retrospective analysis was designed to assess 90 patients with *H. pylori* positive videogastroscopy diagnosis to amoxicillin 1 gram/tab twice a day for 7 days, clarithromycin 500 mg/tab twice a day for 7 days + V7 group (vonoprazan 20 mg/tab twice a day for 7 days) or V14 group (vonoprazan 20 mg/tab twice a day for 14 days). Primary endpoints of the study are eradication rate and adverse events. Primary endpoints of the study are eradication rate via *H. pylori* stool antigen 4 weeks off antibiotics and adverse events.

Results : Forty-five patients in V7 group and 44 of 45 patients in V14 group achieved cure after treatment.

Demographic characteristics were insignificantly different in both groups. No significant difference in eradication rate was noted (100% versus 97.78%, P = 0.315). The adverse events were not significantly different between the groups (24.44% in V7 group versus 28.89% in V14 group, P = 0.634).

Conclusions : Seven-day treatment of vonoprazan-based regimen is as effective as 14-day treatment of vonoprazan-based regimen in eradicating *H. pylori* infection.

Key words : Vonoprazan, *H. pylori*, Eradication

PD-041

Role of probiotics as an add on therapy in eradicating *H. pylori* infection

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Purpose : To compare the *H. pylori* eradication rate with and without probiotics in conjunction with triple regimen.

Methods : symptomatic patients with *H. pylori* confirmed with urea breath test (UBT) were enrolled. Patients were divided in two groups. Experimental group received probiotics plus triple regimen while control group received only triple regimen. UBT was repeated 4 weeks after completion of therapy for confirmation of eradication. Patients with negative UBT were considered as treatment success. All the collected data were compiled and analyzed by SPSS v25.0 . the primary outcome measure the eradication rates of *H. pylori* in both groups was compared by using Chi-Square test. ata were stratified for age and gender to address the effect modifiers. A p-value <0.05 was taken as significant.

Results : Total 160 patients were enrolled and equally divided in two groups I.e Group A (probiotivs+ERA therapy) abd Group B (only ERA therapy) . In group A, *H. pylori* eradication was seen in 71(88.8%) and 59 (73.8%) in group B with a P-value of 0.015 which is statistically significant.

Conclusions : Addition of probiotics to standard triple regimen therapy improves eradication rate of *H. pylori* infection.

Key words : *Helicobacter pylori*, Eradication Therapy, Probiotics

PD-042

Initial results of virulence factors of *Helicobacter pylori* in non-cardia gastric cancer and duodenal ulcer in Ha Noi, Vietnam

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Purpose : Vietnam is the 10th highest rate of gastric cancer in the world. It is estimated that 15.9 out of every 100.000 people have gastric cancer. While many researches across the globe have determined the significant role of virulence factors *cag-PAI, oipA, dupA* of *Helicobacter pylori (H. pylori)* in gastroduodenal disease but the study about these factors of *H. pylori* strains isolate from Vietnam are still limited.

Aim : Investigate the prevalent of *cag-PAI, oipA, dupA* of *H. pylori* in patients with non-cardia gastric cancer (GC) and duodenal ulcer (DU) in Ha Noi, Vietnam

Methods : This prospective, cross- sectional descriptive study involved 74 patients have *H. pylori* positive which divided into 2 groups: 31 GC and 43 DU. Patients were recruited from 103 Hospital and 108 Hospital from 8/2019 -11/2019.

Results : According to Borrman classification: Borrman type 3 is the highest (54.8%), follow by type 1, type 2 (29.0% and 16.2%, respectively) meanwhile there is 0% of type 4. According to Lauren classification, the intestinal type is the highest, account for 64.5 %, follow by the diffuse type (29.0%), mixed type (6.5%). The proportion of *cag-PAI, oipA, dupA* of *H. pylori* in GC group is 90.3%; 32.3% and 51.6%, respectively while this proportion in DU group is 62.8; 9.3% and 65.1%, respectively.

Conclusions : The proportion of *cag-PAI* and *oipA* in GC group are significant higher than those in DU group ($p < 0.05$) while the percentage of *dupA* in GC group is lower compare to DU group but this difference is not statistically significant.

Key words : Gastric Cancer, Duodenal Ulcer, *H. pylori*

PD-043

Making old antibiotics new again - A novel approach in the treatment of *H. pylori*

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Purpose : Overcoming AMR is particularly challenging in the case of bacterial infections that are hard to reach for the antibiotics. This is the case for intracellular pathogens such as Salmonella, or because the environment in which the pathogens live is not suitable for the antibiotics used (e.g. the low gastric pH for *Helicobacter pylori*, leading to fast antibiotic degradation). *Helicobacter pylori* is becoming increasingly resistance rates approaching 70% of isolates (Metronidazole) and 33% (Clarithromycin), or 24% for both.

Methods : We propose a three-pronged approach designed to overcome AMR by developing a novel liposomal oral delivery system with epitelial targeting, protecting antibiotics from degradation under acidic conditions. Assessment of liposomal delivery system using repurposed antibiotics against resistant clinical isolates in vitro infection model.

Results : The antibiotic - loaded liposomes carrying the *H. pylori* adhesin BabA bind to the mucins at the epithelial surface. The ligand found on the surface of human gastric epithelium and on gastric mucins, and is the specific ligand used by *H. pylori* for epithelial cell mucin attachment via BabA.

Conclusions : Developing new antibiotics takes decades of R&D and large financial investments from pharmaceutical companies; inactivation by gastric acid limits the available options to a subset of antibiotics. The suggested liposomal delivery system will enable repurposing of existing antibiotics with known safety profiles, thus achieve a faster translation from bench to clinics

Key words : *Helicobacter pylori*, AMR, Liposomes

PD-044

Comparison of Bismuth-containing quadruple therapy and concomitant quadruple therapy as first-line treatment for *Helicobacter pylori* infection in Vietnam

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Purpose : To compare the efficacy, safety, and compliance of BT and CT as first-line therapy for *H. pylori* eradication in clinical practice in an area of high resistance to clarithromycin and metronidazole.

Methods : A total of 112 dyspeptic adult patients with *H. pylori* infection and with no previous eradication treatment were participated. BT (Esomeprazole 40 mg (Nexium), bismuth subcitrate 240 mg, tetracycline 500 mg, metronidazole 500 mg, all given twice daily for 15 days) or CT (Esomeprazole 40 mg (Nexium) + clarithromycin 500 mg + amoxicillin 1 g (Augmentin)+ metronidazole 500 mg, all given twice daily for 15 days) was prescribed. Eradication was tested by 13 C-urea breath test or urease test. Efficacy was assessed by intention-to-treat (ITT) and per-protocol (PP) analyses.

Results : Intention-to-treat (ITT) eradication rates of 15-day bismuth based quadruple therapy and 15-concommitant therapy were 97.7 % and 70.6 %, respectively, and the per-protocol (PP) rates were 98.6 and 72.5%, respectively. The eradication rate was higher in the BT group, both the ITT and the PP analyses had a significant difference ($P < 0.05$). However, the adverse events were slightly higher in the BT group than the CT group (25.6% vs. 23.5%, $P > 0.05$).

Conclusions : A 15-day bismuth based quadruple therapy is more effective than concomitant therapy against *H. pylori* infection in high resistance area to clarithromycin and metronidazole. Bismuth based quadruple therapy should be used as first line treatment for *Helicobacter pylori* infection in Vietnam.

Key words : *Helicobacter pylori* Eradication, Bismuth Based Quadruple, Resistance

PD-045

The prevalence and risk factors of *Helicobacter pylori* infection among Libyan Healthy Families in Tripoli region. Preliminary results

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Purpose : *H. pylori* infection is primarily acquired during childhood, with a higher frequency in developing countries. There is no information available regarding the prevalence of *H. pylori* infection and its associated risk factors in the healthy family members population of our country. The Objectives: - To establish the prevalence of *H. pylori* infection in asymptomatic family members resident in Tripoli, and its associated risk factors.

Methods : During September-December 2019. A cross-sectional survey was carried-out. A Blood sample from (75) participant members of Eighteen family (mean age 27.1 years) were enrolled in the study, specific anti-*H. pylori* IgG, and questionnaire covering Sociodemographic variables were administered and completed by interview.

Results : The overall, seroprevalence of *H. pylori* was 57.3% in the healthy members of families, there was a gradual increase with age, Females shows higher prevalence of *H. pylori* infection (53%) than males (47%). The seropositivity was high in the middle (50%) and low family income (37%), also the prevalence was higher for those who had family members 0f 5-7 persons (60%). However, the prevalence did not significantly differ by the Blood group, smoking, hand washing, abdominal pain, and drinking Coffee or Tea.

Conclusions : In Tripoli region, the prevalence of *H. pylori* are highly among the members of a single family especially in those who their parents were infected , which might be related to the socioeconomic status, and living conditions, as a major risk factors for *H. pylori* infection. However, larger studies in other cities of our country should be conducted to confirm the study findings.

Key words : *H. pylori*, Asymptomatic., Libya

PD-046

Helicobacter pylori virulence factor and gastric cancer in Mongolia

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Purpose : We aimed to characterize gastric cancer and investigating *H. pylori* infection rate as well as examining virulence factor among gastric cancer patient

Methods : This was a case-control study based on upper gastrointestinal endoscopy, gastric histology, *H. pylori* testing, and risk factor questionnaires were obtained. Histologic subtypes were determined by Lauren's classification. Bacterial isolation was done and performed PCR.

Results : We enrolled over 40 years, 45 gastric cancer and 108 non-gastric cancer patients. Gastric cancers were located in upper part of stomach in 53.3%, main gastric body in 37.8%, and lower part of stomach in 8.9%. The majority (60%) were diffuse type, followed by intestinal type (36.7%) and indeterminate type (3.3%). *H. pylori*infections were CagA positive in 100% with cancer vs 81% without cancer (P = 0.02). The prevalence of the cagA-positive/vacA s1/m1 genotype was the highest in gastric cancer patients 76.5%.

Conclusions : The characteristic topography of gastric cancer in Mongolia being in the gastric corpus differed from other East Asian countries such as Korea, Japan and China where having high incidence of gastric cancer and was more similar to western countries. The risk factors for gastric cancer in Mongolia were similar to other high-risk areas that in addition to *H. pylori* infection, excessive use of salt, tobacco smoking, and low ingestion of fruits.

Key words : *Helicobacter pylori*, Gastric Cancer, Genotyping

PD-047

The efficacy of esomeprazole and furazolidone-based remedial therapy in patients with medication failure in the eradication of *Helicobacter pylori* infection.

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Purpose : To evaluate the efficacy of esomeprazole and furazolidone-based quadruple therapy in the treatment of first-line failed eradication of *Helicobacter pylori* (*H. pylori*) infection.

Methods : 53 patients with medication failure (routine triple therapy) of *H. pylori* in our hospital were randomized into group A (29) and group B (24). Group A received esomeprazole + bismuth pectin + amoxicillin + furazolidone for 7 days; Group B received omeprazole + bismuth pectin + amoxicillin + clarithromycin for 7 days. The efficacy was compared between the two groups.

Results : In group A, 27 patients completed the treatment and follow-up, of which, 25 were successful in remedial treatment, 4 had adverse drug reactions. In group B, 24 patents were completed, of which 18 were successful in remedial treatment and 3 had adverse drug reactions.

Conclusions : The treatment of esomeprazole and furazolidone based quadruple therapy is better than the conventional quadruple therapy in the patients with medication failure in the initial treatment of *H. pylori*, and the incidence of adverse reactions remained insignificant, so it is worthy of clinical popularization.

Key words : *Helicobacter pylori*, Esomeprazole, Furazolidone

PD-048

The prevalence, characteristics, risk factors and related gastric cancer of chronic atrophic gastritis (CAG) in South China in the nearly 10 years

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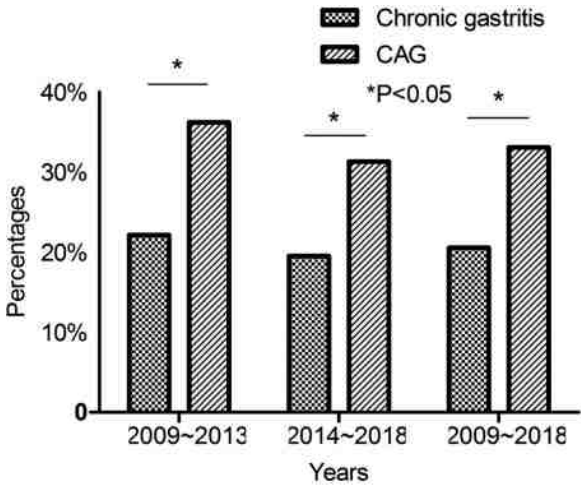
Purpose : To explore the prevalence, characteristics, risk factors and related gastric cancer of chronic atrophic gastritis (CAG) in South China in the nearly 10 years.

Methods : All patients pathologically diagnosed as CAG from January 1st of 2009 to December 31st of 2018 in our hospital were analyzed and divided into two groups (2009~2013 and 2014~2018). The prevalence, clinical and endoscopic characteristics, risk factors and related gastric cancer were analyzed and compared.

Results : The prevalence of CAG was 20.92% (24,084/115,110) on average in South China from 2009 to 2018, and 18.78% (8,468/45,087) from 2009 to 2013 and 22.30% (15,616/70,023) from 2014 to 2018, respectively ($P<0.05$). The *Helicobacter pylori* (Hp) infection rate in CAG (33.07%) was much higher than in chronic gastritis (20.56%) ($P<0.05$). There were less younger(age 30 to 44) and more older (age 60 to 74) CAG patients, with more total gastric atrophy, more erosion, more bile acid reflux and less peptic ulcer from 2014 to 2018 than from 2009 to 2013 ($P<0.05$). The related gastric cancer in CAG was mostly located in the body and angle.

Conclusions : The prevalence of CAG and total gastric atrophy in South China is increasing in recent years. The eradication of Hp infection and treatment of bile acid reflux and erosion are essential, and endoscopic follow-up is important for CAG.

Key words : Chronic Atrophic Gastritis, *Helicobacter pylori*, Characteristics



Hp infection rate of CAG and chronic gastritis in South China from 2009 to 2018

PD-049

Helicobacter pylori eradication therapy in Cipto Mangunkusumo Hospital Indonesia : A brief report

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Purpose : *Helicobacter pylori* (HP) infection is a common infection worldwide. The estimated prevalence of HP infection in Indonesia was 22.1 %. This study aims to describes HP infection and treatment in Indonesia.

Methods : Record of patients with positive HP infection based on histopathology examinations in Dr. Cipto Mangunkusumo Hospital from 2016-2019 were traced and further information was assessed through medical record.

Results : 115 patients were enrolled in this study, 58 patients were women (50,4%), mean age of 52.91±14.219 years old, Bataknese (35,7%) was the most affected ethnic group, and most BMI was found normal (39.1%). Abdominal pain was the most frequent symptoms lead to endoscopy (69.6%), followed by anemia (51.3%) and gastrointestinal bleeding (38.3%). Blood examinations showed mean hemoglobin of 11.38±2.65. The most frequent endoscopy findings were esophagitis grade A (40.9%), antrum hyperemic (49.6%), antral erosions (20%), antral ulcers (7.8%), and antral healing ulcers (12.2%). Histopathology examinations showed active chronic gastritis (67.8%) with features of non-atrophic (45.2%) and non-dysplastic mucosa (98.3%). Updated Sydney System (USS) staging showed grade III cases in 59 (29.6%), and stage 0 in 58 (17,4%). Triple therapy using Amoxicillin, Clarithromycin, and Lansoprazole was the most common regiment (23.5%), yet eradication effectiveness rate were only 44,3%.

Conclusions : The level of eradication therapy completeness in Indonesia was still low. Triple therapy using Amoxicillin, Clarithromycin, and Lansoprazole was the most common therapeutic regiment.

Key words : *Helicobacter pylori*, Eradication Therapy, Indonesia

PD-050

Helicobacter pylori infection as a risk factor for episodes of acute exacerbation in chronic tonsillitis

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Purpose : The purpose of this study was to see or determine *H. pylori* infection as one of the risk factors for episodes of acute exacerbations in chronic tonsillitis

Methods : This study uses a cross-sectional analysis design in patients with chronic tonsillitis who undergo tonsillectomy with general anesthesia. Patients were divided into two groups, the frequency group of acute exacerbation episodes < 7 times per year and groups > 7 times per year. The minimum number of samples for each group is 35 people. Detection of *H. pylori* infection using immunohistochemical examination with anti-H polyclonal antibodies was done in the tonsillar tissue after tonsillectomy. The statistical analysis used was Chi squares, Logistic regression and Independent sample t-test.

Results : Based on the results of immunohistochemical examination, *H. pylori* was found in 20 tonsil tissue (29%), which consisted of 8 (40%) men and 12 (60%) women. With Chi squares statistical analysis, the prevalence risk (RP) 1.147 (95% CI: 0.702-1.871) was obtained. This proves that *H. pylori* infection will increase the incidence of acute exacerbation episodes > 7 times per year by 1,147 times compared to those not infected with *H. pylori*, although it is not statistically significant (P = 0.793).

Conclusions : *H. pylori* infection has been shown to play a role as a risk factor for acute episodes of acute exacerbation in chronic tonsillitis.

Key words : Chronic Tonsillitis, *Helicobacter pylori*, Acute Exacerbation Episode

PD-051

Helicobacter pylori Antibiotic Resistance in Jakarta, Indonesia: a Case report

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Contents : *Helicobacter pylori* (HP) infection is a common chronic bacterial infection in humans that is associated with peptic ulcer disease, gastric cancer, and primary gastric B-cell lymphoma. HP infection continues to be a major public health issue worldwide. One study of global systematic review showed that in 2015, approximately 4.4 billion individuals worldwide were estimated to be positive for HP. The prevalence of HP infection in Indonesia is varies by ethnicity. There are very few studies that showed HP antibiotic resistance in Indonesia. Here we present two cases of HP antibiotic resistance in our centre in Jakarta, Indonesia. In the first case, patient came with chief complaint recurrent epigastric pain since 1 year ago. He was diagnosed with HP infection since 1 year ago, but resistance to 5 therapy with the last therapy were PPI, Amoxicillin, and Rifampicin. After that patient was undergone another gastoroscopy and biopsy for HP culture. The last therapy given to this patient was bismuth quadriple and showed successful eradication of HP infection. The second case, patient came with chief complaint nausea since two months ago, patient already performed the gastroscoscopy and dignosed with HP infection. After therapy with first line therapy, the histopathology from biopsy still showed positive result for HP. After that patient treated with PPI, Amoxicillin and Levofloxacin and showed successful eradication of HP infection. From this case illustrations we conclude that the prevalence of HP antibiotic resistance was quite low and there are few modalities for diagnose and treat it.

Key words : *Helicobacter pylori*, Antibiotic Resistance, Indonesia

PD-052

Helicobacter pylori infections among patients with type 2 diabetes mellitus in Benghazi, Libya

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Purpose : Diabetes Mellitus is the most common endocrine disease, diabetic patients also suffer more frequently from (complicated) infections compared with non-diabetic patients one of them is *Helicobacter pylori* (*H. pylori*) infection, it is a major health aliment in developing countries. The Aim of the study: To determine the prevalence of *H. pylori* infection in Type 2 diabetic Patients.

Methods : From the period of 2015 -2019. A cross sectional study recruited three hundred patients, two hundred were type 2 diabetics attending Benghazi diabetic center and one hundred non-diabetic patients which served as control group was taken from Benghazi medical center and Elhiaa clinic. Their ages ranged between 25 to 70 years, all members of the study were investigated for serum *H. pylori* -IgG by Elisa, blood glucose levels and HbA1c and Parasitic tests were also done for all patients. Socio demographic characteristics were taken during the interview.

Results : The overall prevalence of *Helicobacter pylori* infection among Type2 diabetic patients were 144 (72.0%) with highly significant difference (P=0.000) compared to 49% of the non-diabetic group

Conclusions : Our results show that there was no statistical difference in *H. pylori* positivity according to gender, smoking, and education level in diabetic and non-diabetic while presence of parasitic infection and gastrointestinal symptoms in *H. pylori* positive patients were statistically different between diabetic and non-diabetic group being higher in diabetics. *H. pylori* was statistically more prevalent in diabetic with higher fasting

plasma glucose and HbA1c. Diabetes duration was not predictor for *H. pylori* infection.

Key words : *Helicobacter pylori,* Diabetes Mellitus, Benghazi, Libya

PD-053

Frequency of anemia and iron deficiency anemia in patients with *Helicobacter pylori* infection

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Purpose : *H. pylori* infection remains most common cause of epigastric pain, anemia, ulcer and cancer and is associated with high morbidly and medicine cost. In this study, we evaluated to determine the frequency of anemia and iron deficiency, anemia in patients and *H. pylori* infection.

Methods : A descriptive cross sectional study was conducted in medical OPD, Liaquat University Hospital Hyderabad, from May 2017 to November 2017. A total 140 patients conducted in study. From patients fulfilling inclusion criteria. Brief history regarding epigastric pain, duration of anemia, colour of stools (melena) and ferritin level was taken, also blood samples taken and send to laboratory for evaluating anemia (HB.level) iron deficiency (serum ferritin &Mcr) and *H. pylori*.

Results : Result of total 140 subject, average age of patients were 40.44 + 14.268 years, 55 (39.3%) were females and 85 (60.7%) were males. 70 (50%) patients were anemic among *H. pylori* patients and 38 (27.1%) patients in this study who has iron deficiency anemia.

Conclusions : Our study suggest the treatment *H. pylori* infection could be effective in improving anemia and iron state on iron deficiency anemia patients infected by *H. pylori*, particularly in patients with moderate to serve anemia.

Key words : *H. pylori* Infection, Iron Deficiency Anemia

PD-054

Correlation of *H. pylori* infection and upper GI endoscopic findings in a provincial hospital in Thailand.

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Purpose : *H. pylori* is one of major causes of various gastroduodenal lesions such as chronic inflammation, intestinal metaplasia, peptic ulcer, polyp and cancer. Upper endoscopy can provide both endoscopic findings and results of testing for *H. pylori*. It is interesting to know association between endoscopic findings and *H. pylori* infection.

Methods : All patients presenting to Chaophraya Abhaibhubejhr Hospital, Prachinburi, Thailand for high-definition upper endoscopy were prospectively tested for *H. pylori* infection by rapid urease test from antrum and body of the stomach. All baseline data and endoscopic findings were recorded and compared between patients with positive (group A) and negative (group B) HP infection. The protocol was approved by Ethics committee of Chaophraya abhaibhubejhr Hospital.

Results : 450 patients (201M, 249F) were enrolled with median age at 56 years (range 15-92). 305 (159F, 149M) from 450 patients (67.8%) had positive test for *H. pylori* infection and were classified as group A. Group A had significantly higher rate of following findings than group B; findings included esophagitis (23/305 versus 2/145, respectively P=0.02), gastritis (225/305 versus 123/145, respectively, P=0.03), and duodenal ulcer (47/305 versus 2/145, respectively, P=0.01). Following endoscopic findings were not significantly different between group A and B; gastric ulcer (63/305 versus 25/145, respectively, P=0.9), and duodenitis (20/305 versus 9/145, respectively, P=0.9).

Conclusions : *H.pylori* infection is leading to abnormal endoscopic findings.

Key words : *H. pylori*, Endoscopic Findings, Correlation

PD-055

Rapid urease test for *Helicobacter pylori* in population who stop proton pump inhibitor less than 2 weeks compared with histopathology: A preliminary result

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Purpose : The diagnosis of *Helicobacter pylori* (HP) in patients who currently taking proton pump inhibitor (PPI) by rapid urease test (RUT) has been controversy. In limited resource area, RUT is the only available method. We aimed to evaluate the sensitivity of RUT and pathology in those patients.

Methods : Dyspeptic patients with history of PPI use for at least 2 weeks and still taking PPI within 2 weeks before EGD were included. Two biopsies were taken from 2 sites; antrum and body for RUT and pathology. The pathology was assessed by 2 pathologists who were blinded from RUT and endoscopic result. The positive test for HP was determined by RUT, H&E or Giemsa stain.

Results : This is the preliminary result of 67 patients. From the first 25 patients, 6 (24%) were male with mean age of 51.4 ± 9.1 years. The mean duration of PPI use and withhold was 59.1 ± 51.6 and 4 ± 4.2 days (range 0-13) respectively. Fifty-two percent (13/25) were finally diagnosed HP infection by either RUT or pathology. RUT was positive at body and antrum alone in 3 and 2 patients, respectively. RUT at antrum vs. body provided 69.2% vs. 76.9% sensitivity whereas the sensitivity of pathology at antrum vs. body was 46.2% vs. 53.8%. When combining the tissues from antrum and body for RUT, the sensitivity was increased to 84.6%.

Conclusions : From preliminary study, combination of RUT at antrum and body is sensitive to diagnose HP infection in patients who currently taking PPI.

Key words : *Helicobacter pylori*, Rapid Urease Test, Proton Pump Inhibitor Use

PD-056

Primary antibiotics resistance of *Helicobacter pylori* isolated from peptic ulcer children at national pediatric hospital, Hanoi, Vietnam

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Purpose : *Helicobacter pylori* (*H. pylori*) is the major cause of peptic ulcer disease (PUD) in children. Treatment of *H. pylori* induced PUD is challenging due to antibiotics resistance. The objective of this study is to evaluate the prevalence of antibiotic resistance in *H. pylori* strain isolated from PDU children in National Pediatric hospital in 2017 in Hanoi-Vietnam.

Methods : 165 children x, 127 boys (mean age 10.8) and 38 girls (mean age 9.8) had symptoms of gastro-duodenal disease with no history of eradication of *H. pylori*, were recruited from January to December 2017 at National Pediatric hospital, Hanoi, Vietnam. By gastric endoscopy, we performed biopsy, and dyed *H. pylori* shed for histopathology. We conducted *H. pylori* culture to examine antibiotic resistance of *H. pylori* to clarithromycin, levofloxacin, amoxicillin, tetracycline and metronidazole using a standardized protocol using Etest strips.

Results : We observed 163 strains (98.8%) with primary antibiotic-resistant *H. pylori*. Resistance to clarithromycin was the most predominant with the highest proportion of 97%. Resistance to amoxicillin, metronidazole, levofloxacin and tetracycline were 51.5%, 66.1%, 9.7% and 0.6 %, respectively. Co-resistance to two antibiotics was observed among 64.8% for clarithromycin and metronidazole, and 31.5% for amoxicillin and metronidazole. Triple resistance to amoxicillin, clarithromycin, and tetracycline was as low as 0.6%.

Conclusions : Since primary antibiotic resistance of *H. pylori* children on peptic ulcers are common, it is necessary to the use antimicrobial susceptibility test before prescribing antibiotics in order to improve the effectiveness of *H. pylori* eradication.

Key words : Peptic Ulcer Disease, *H. pylori*, Children

PD-057

Importance of pectolinarigenin for the treatment of gastric cancer: Chemical profiling and phytopharmaceutical approaches

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Purpose : Pectolinarigenin is a natural flavonoidal compound having anti-cancer potential against different form of cancer. Pectolinarigenin is a natural flavonoid compound found to be present in *Eupatorium odoratum, Cirsium chanroenicum, Clerodendrum phlomidis* and *Cirsium japonlcum.*

Methods : The purpose of this work is to collect data for the development of better molecule against gastric carcinoma, describe their mode of action and possible pathways for cellular level of action. Research data of pectolinarigenin were analyzed for their anti-cancer activity against gastric carcinoma. Importance of Pectolinarigenin in gastric carcinoma has been also serached through literature database. Further all the analyzed data are compared to the other *In-vitro* and *In-vivo* experiment data to search better molecul against gastric carcinoma.

Results : Data analysis revealed that Pectolinarigenin is a natural flavonoidal compound having chemical formula $C_{17}H_{14}O_6$. Pectolinarigenin demonstrate anti-cancer activity against gastric carcinoma through interaction with various biomolecules. Pectolinarigenin have anticancer properties mainly against lung cancer, melanoma, hepatocellular carcinoma and colorectal adenocarcinoma. Presented data of pectolinarigenin in this study could also support the role and prevention of cellular damage which play important role in the treatment of gastric carcinoma.

Conclusions : Importance and mechanism of pectolinarigenin in gastric carcinoma have been investigated through different data bases presented in the scientific field.

Key words : Gastric Cancer, Peroxisome Proliferator-activated Receptorγ, Cyclin-dependent Kinase

PD-058

Biological importance of avicularin as potential anticancer agents for the treatment of gastric carcinoma: An overview of phytotherapeutic approaches

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Purpose : Flavonoids are broadly distributed within the plant kingdoms and present as very low molecular weight component in fruits, nuts, vegetables, seeds, stem, flowers, tea etc. Avicularin is a flavonoidal class chemical which protects our body against oxidative stress.

Methods : Various literature databases have been searched and evaluated statistically for anticancer potential of avicularin against gastric carcinoma. Molecular mechanism of action of avicularin on human gastric cancer was investigated through literature database. So in the present study importance of avicularin for the treatment of gastric carcinoma have been investigated as per the literature support.

Results : From the data analysis it was found that avicularin have positive impact on human gastric carcinoma. Role of avicularin in gastric cancers was also established with their underlying molecular mechanisms. Literature study suggest that avicularin is potent anticancer compounds that bind to a novel site. Further avicularin have significant effect on human colon carcinoma cell which support their importance against gastric carcinoma. Data analysis showed the importance of avicularin as it is drug-like candidates for the treatment of gastric cancers.

Conclusions : Present work describes the importance of avicularin against gastric carcinoma. Studies of avicularin validated them as appropriate candidates for more potent anticancer compounds against gastric cancer.

Key words : Tubulin, Gastric Carcinoma, Phytocompound

PD-059

Importance of asiaticoside for the treatment of for gastric disorders through modulation of superoxide dismutase, catalase, and glutathione peroxidase: A phytotherapeutical approach

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Purpose : *Centella asiatica* is well known medicinal herb in the Sri Lanka, Madagascar and India. Asiaticoside is a pentacyclic triterpenoid saponin which has anti-inflammatory, anti-oxidant and wound healing properties.

Methods : In the present investigation information of asiaticoside have been collected and presented for the treatment of gastric disorders. Molecular mechanism of asiaticoside have been searched in the scientific research for the treatment of oxidative stress. Further importance of asiaticoside in herbal medicine have been also collected through different database for the development of better phytomedicine.

Results : From the analysis of data of different experiment presented in the scientific research, we found that asiaticoside is important phytochemical of *Centella asiatica*. Analysis of the literature data also revealed the importance of asiaticoside against production of nitric oxide. Present study revealed the importance of asiaticoside for the treatment of gastric disorders through different mechanism against oxidative damage, antioxidant level and anti-inflammatory potential. Study also reveled the importance of asiaticoside against superoxide dismutase, catalase and glutathione peroxidase which are the main factor in the body responsible for the oxidative damage. Literature study also support the importance of asiaticoside against numerous disorders.

Conclusions : So the present work is supportive for the development of some novel medicine for the treatment of gastric disorders from natural compounds.

Key words : Asiaticoside, Gastric Disorders, Glutathione Peroxidase

PD-060

Biological importance of ascaridole for the treatment of gastric cancers: Interference of binding sites of topoisomerase and tubulin

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Purpose : Ascaridole was the best antihelmintics for the treatment of ascarids and hookworms for humans in the 1900's. Ascaridole have been used in the traditional and modern medicine for the treatment of antihelmintics. There are more than 200 types of cancer and anything that may cause a normal body cell to abnormality can cause cancer.

Methods : Due to toxic effect of ascaridole, present investigation deals the study of ascaridole for their anticancer activity against gastric cancers through analysis of different databas. Further to understand their anti-cancer activity in better way, molecular docking study have been performed to the binding sites of topoisomerase and tubulin to know about their form of interactions and binding energy. All the presented data have been thoroughly analyzed through different statistical methods.

Results : Ascaridole is a bicyclic monoterpene which have sedative, antifungal and pain-relieving properties. It is a potent inhibitor of *Plasmodium falciparum*, *Trypanosoma cruzi* and *Leishmania amazonensis*. From the analysis of all the presented data, ascaridole revealed their effectiveness against gastric cancers. Data analysis of literature work also revealed antitumor activity in sarcoma 180 murine model, and different tumor cell lines which further support the present investigation for the development of effective medicine against gastric cancers. Molecular docking study suggests that ascaridole is a potent anticancer compound.

Conclusions : Present work will be beneficial to the researcher in the field of medicine for the development of medicine against gastric cancers.

Key words : Epidermal Growth Factor Receptor, Tubulin, Gastric Cancers

PD-061

Classification of esophageal cancer stadium based on artificial intelligence systems using Recurrent Neural Network (RNN) algorithm

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Purpose : One way to detect the presence of esophageal cancer is by examining it using colonoscopy. After an esophageal cancer is detected, classification is done to determine the stadium of cancer. In this study, we used the RNN model for the classification of Esophageal cancer stadium. This study aimed to explain the procedure and the accuracy of the Elman tissue RNN modeling in esophageal cancer stadium classification from the colonoscopy photo.

Methods : The process carried out is to convert the image of reed green blue (RGB) to a grayscale image on the colonoscopy data. After that the image was extracted with Gray Level Cooccurance Matrix which was designed using GUI with Matlab. There are 14 features, namely energy, contrast, correlation, sum of square, inverse different moment, sum average, sum variance, sum entropy, entropy, differential variance, differential entropy, maximum probability, homogeneity, and dissimilarity. The feature is used as input, which is then divided into training data and testing data. After that, Elman network RNN modeling was carried out with data normalization, best model design and data denormalization.

Results : The results of the best model training and testing data were measured using sensitivity, specificity, and accuracy. So that from 74 training data obtained 92% accuracy rate, 96% sensitivity level as a reliable indicator when the results show esophageal cancer, and 79% level of specificity as a good indicator when the results show normal esophageal. While in 18 data testing showed 94% accuracy, 100% level of sensitivity and 80% level of specificity.

Conclusions : Classification results are good.

Key words : Classification, Esopagheal Cancer Stadium, RNN Algorihm

PD-062

The impact of interval of previous endoscopic exam on mortality and treatment modality in undifferentiated-type gastric cancer

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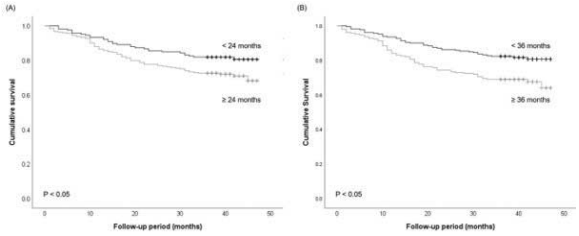
Purpose : The impact of interval of previous endoscopy on the treatment modality or mortality for undifferentiated-type gastric cancer is unclear. This study aimed to investigate the effect of endoscopic screening interval on stage, cancer-related mortality, and treatment methods for undifferentiated-type gastric cancer.

Methods : We reviewed the medical records of patients who were newly diagnosed with undifferentiated gastric cancer in 2013 and in whom the interval of previous endoscopy to diagnosis could be determined. The patients were classified according to the period from interval of endoscopy before diagnosis (< 12 m, 12–23 m, 24–35 m, ≥ 36 m, and no history), and the outcomes were compared between the groups. Patients who underwent endoscopic and surgical treatment were re-classified based on the final treatment results.

Results : Totally 440 patients were enrolled. The male was 64.1%. There were 11.8% who reported to have received endoscopy for the first time in their cancer diagnosis. The rate of stage I at diagnosis decreases as the interval from previous endoscopy to diagnosis increase with significant difference (65.4%, 63.2%, 64.2%, 45.9% and 35.2%, P<0.01). Cancer-related mortality was significantly lower in the 3-year interval of endoscopy, (P<0.001) (Figure 1).

Conclusions : A 3-year interval in endoscopic screening reduces mortality in gastric cancer, particularly in cases of undifferentiated histology. A biennial check-up could increase the likelihood of endoscopic cure.

Key words : Interval, Endoscopy, Gastric Cancer



Relationship between the interval of previous endoscopic exam and cancer-related mortality.

PD-063

Endoscopic submucosal dissection of papillary adenocarcinoma of stomach; A systematic review and meta-analysis.

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Purpose : Papillary adenocarcinoma (PAC) is a rare histologic variant of gastric cancer and categorized into differentiated-type histology. However, therapeutic outcomes of ESD for EGC with PAC have not been clearly demonstrated because of aggressive features such as high rate of lymphovascular invasion (LVI), submucosal invasion, and lymph node metastasis (LNM) reported in studies with surgical specimens. This study aimed to evaluate the feasibility of ESD for EGC with PAC.

Methods : We searched core databases for specific inclusion factors: patients with EGC with PAC, intervention of ESD or surgery, and at least one of the following outcomes: rate of en bloc, complete, curative resection, recurrence, procedure-related adverse event, lymphovascular invasion (LVI), or lymph node metastasis (LNM) that enabled evaluation of feasibility of ESD.

Results : A total of 10 (systematic review) and 4 studies (meta-analysis) were included. There was no robustness in location or morphology of EGC with PAC. EGC with PAC showed frequent submucosal invasion, and high rate of LVI. However, PAC was not an independent risk factor for LNM in studies with surgical specimen. Total en bloc, complete resection, and curative resection rates were 89.7% (95% confidence interval: 55.3-98.4%), 85.3% (67.7-94.2%), and 67% (43-84.5%), respectively. There was no LNM if the EGC with PAC met the curative resection criteria in a surgical specimen.

Conclusions : Although ESD seems to be technically feasible, inaccurate prediction of vertical margin and LVI leads to lower curative resection rate. Application of more strict indication is needed for EGC with PAC.

Key words : Early Gastric Cancer, Endoscopic Submucosal Dissection, Papillary Adenocarcinoma

PD-064

Abdominal obesity increases risk for esophageal cancer: A nationwide population-based cohort study of South Korea

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Purpose : The relationship between overall obesity, as measured by body mass index (BMI), and risk of esophageal squamous cell carcinoma (ESCC) has been reported, and it has a negative correlation. However, the relationship with abdominal obesity, as measured by waist circumference, may be different. We investigated the association between abdominal obesity and ESCC.

Methods : Retrospective cohort study with 22,809,722 individuals who had undergone regular health check-ups provided by the National Health Insurance Corporation between 2009 and 2012 (median follow-up period was 6.4 years) in South Korea. Abdominal obesity was defined as a waist circumference over 90 cm for men and 85 cm for women. We estimated hazard ratios (HRs) and 95% confidence intervals (CIs) using Chi-squared test and Cox proportional hazard model adjusted for confounding factors. Primary outcome was newly developed esophageal cancer.

Results : After adjusting for BMI, abdominal obesity increased the risk of ESCC (HR 1.29, 95% CI 1.23–1.36). Waist circumference is associated with increased risk of ESCC in a dose-dependent manner (P for trend < 0.0001). We analyzed individuals divided into five categories of BMI. Among individuals with overweight (BMI

23–24.9 kg/m2) and obese I (BMI 25–29.9 kg/m2), abdominal obesity was a risk factor associated with developing ESCC (HR 1.22, 95% CI 1.11–1.34; HR 1.28, 95% CI 1.18–1.39, respectively).

Conclusions : Abdominal obesity, not BMI itself, is associated with an increased risk for ESCC. Therefore, reducing abdominal obesity may affect decreasing the development of ESCC.

Key words : Abdominal Obesity, Waist Circumference, Esophageal Cancer

PD-065

Comparing the accuracy of EUS and CT in staging of esophageal cancer

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Purpose : Endoscopic ultrasound (EUS) is a suitable device for staging of esophageal cancers. However, chest computed tomography (CT) has traditionally been the standard diagnostic modality for malignancies. This study aimed was to compare the accuracies of EUS and chest CT in T and N staging of esophageal cancers.

Methods : We retrospectively analyzed 149 patients who had undergone EUS examination and 275 patients who had undergone chest CT before cancer surgery. The inclusion criteria were: 1) patients diagnosed with esophageal cancer on biopsy, 2) patients who had undergone EUS examination or chest CT before cancer surgery, and 3) patients who underwent cancer surgery at the Seoul National University Bundang Hospital from May 2003 to December 2018. We determined the accuracy of T and N staging on EUS examination and chest CT with the biopsy specimens.

Results : The overall accuracies of EUS examination and chest CT were 72.5% (108/149) and 68.7% (189/275), respectively, for T staging (P = 0.487) and 64.4% (96/149) and 61.5% (169/275), respectively, for N staging, which was not statistically different (P = 0.596). For the substaging, the accuracy of EUS examination was not statistically different than that of chest CT for the T, N stage.

Conclusions : EUS examination is not superior to chest CT for diagnosing T stage in esophageal cancers, whereas chest CT is not superior to EUS examination for diagnosing N stage in esophageal cancers. EUS examination and chest CT are not satisfactory for diagnosing T, N stage in esophageal cancers. Futher study is needed for accurate T, N stage.

Key words : Esophageal Cancer, Stage, EUS

PD-066

Long-term proton pump inhibitor and risk of gastric cancer after *Helicobacter pylori* eradication: A Korean population-based study using common data model

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Purpose : Previous studies have raised concerns about the association between long-term proton pump inhibitors (PPIs) use and the risk of gastric cancer (GC) after *Helicobacter pylori (H. pylori)* eradication therapy. We analyzed the risk of GC among PPI-exposed patients after *H. pylori* eradication therapy in Korea.

Methods : This study was based on Korean National Health Insurance Service (NHIS) database converted by common data model (CDM). We defined target cohort as subjects aged > 40 years who received PPI therapy more than 30 days after clarithromycin-based triple therapy between 2002 and 2013. Comparator cohort group was defined as subjects aged > 40 years who received clarithromycin-based triple therapy without PPI exposure during the study period. After propensity score matching, we compared the risk of GC between two cohorts by Cox proportional hazards model.

Results : The original cohort consisted of 7,848 target cohort and 13,847 comparator cohort. After large-scaled propensity score matching with previous diagnosis and

medication, 5850 matched target and comparator cohorts were included in the analysis. The median follow-up duration was 4.1 year and the mean interval from *H. pylori* eradication to the diagnosis of GC was 1.9 years. The PPI-exposed cohort had more risk of GC compared with non-exposed cohort (121/26,189 person-years vs. 36/23,264 person-years, HR 2.65, 95% CI;1.8-3.9, P=0.001).

Conclusions : Long-term PPIs use was associated with an increased GC risk in patients after *H. pylori* eradication therapy in Korea. It is necessary to have attention to PPI use after *H. pylori* eradication.

Key words : Proton Pump Inhibitor, Gastric Cancer, *Helicobacter pylori*

PD-067

A prospective randomized controlled trial of the safety and efficacy of carbon dioxide insufflation compared with room air insufflation during gastric endoscopic submucosal dissection

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Purpose : To assess the safety and efficacy of CO_2 insufflation during gastric ESD by comparing the end-tidal CO_2 ($EtCO_2$) level to room air insufflation.

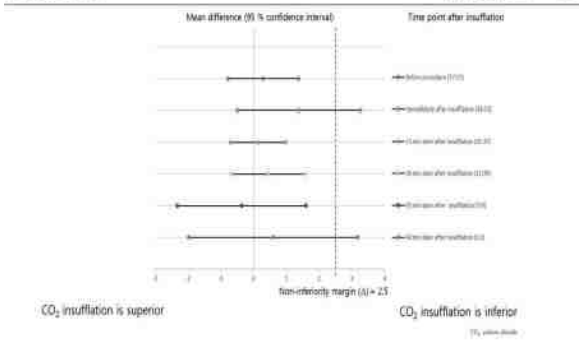
Methods : 76 patients with a gastric dysplasia or EGC were enrolled between January 2016 and May 2017. Primary outcome included difference in the sequentially measured mean $EtCO_2$ with 95% CI between two groups. Secondary outcomes included relief of abdominal pain and residual gas accumulation, procedure-related adverse events, total dosage of sedatives analgesics.

Results : 74 patients were analyzed after excluding one patient from each group. Upper bound of the 95% CI for difference in the mean $EtCO_2$ between two groups before the procedure, at 15, 30 and 45 minutes after starting insufflation were all lower than pre-specified margin of 2.5 for non-inferiority (Figure 1) and larger at immediately after insufflation and 60 minutes, but $EtCO_2$ level were within the normal range. Proportion of patients who had a 100-mm VAS score of 0 at each time point was higher in the CO_2 group up to 24 hours after ESD (P=0.002) (Fig 2). Abdominal X-ray grade were more improved in CO2 groups (28 (75.7%) *vs.* 17 (45.9%), P=0.009)) at 24 hours compared with 1 hour after ESD (Fig3). There was no significant difference in dosage of sedatives but room air group received more analgesics than CO_2 group (25/37 (67.6%) *vs.* 13/37 (35.1%); P=0.005).

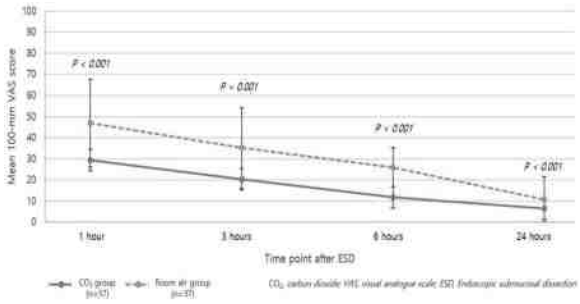
Conclusions : CO_2 insufflation during gastric ESD is as safe as using room air, and achieve more rapid relief of abdominal pain and intra-abdominal residual gas.

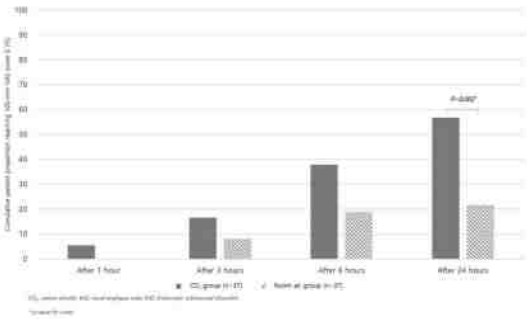
Key words : Endoscopic Resection, Carbon Dioxide, Safety

Sequential time points (patient no., CO_2 group:Room air group)	CO_2 group (n=37)	Room air group (n=37)	Difference (95% CI)	p valu
Before procedure (37:37)	[illegible]	[illegible]	0.297 (-0.777, 1.372)	0.583
Immediately after insufflation (36:37)	[illegible]	[illegible]	1.386 (-0.497, 3.268)	0.147
15 min later after insufflation (35:37)	[illegible]	[illegible]	0.141 (-0.701, 0.984)	0.716
30 min later after insufflation (12:20)	[illegible]	[illegible]	0.450 (-0.668, 1.568)	0.418
45 min later after insufflation (7:6)	[illegible]	[illegible]	-0.357 (-2.323, 1.609)	0.697
60 min later after insufflation (5:2)	[illegible]	[illegible]	0.600 (-1.975, 3.175)	0.715
After procedure (37:37)	[illegible]	[illegible]	0.351 (-0.541, 1.244)	0.435

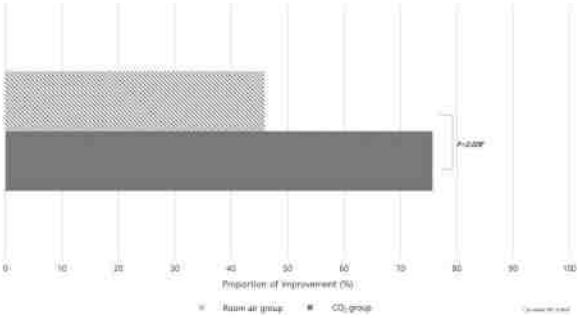


The upper bounds of the 95% CI for the difference in mean EtCO2 between the two groups before the procedure and at 15, 30 and 45 minutes after insufflation were less than the pre-specified margin of 2





Cumulative proportion of patients with a 100-mm visual analogue scale score of 0 at each time point. The proportion of patients with a VAS score of 0 at up to 24 hours after ESD was higher in the CO2



Improvement in abdominal residual gas accumulation, as determined by abdominal X-ray grading, at 24 hours compared with 1 hour after endoscopic submucosal dissection

PD-068

Increasing trend and characteristics of gastric cardiac neoplasms

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Purpose : The frequency of cardiac cancers seems to increase in Eastern countries as well as Western. The aim of this study was to investigate the incidence and characteristics of cardiac neoplasms for fifteen years.

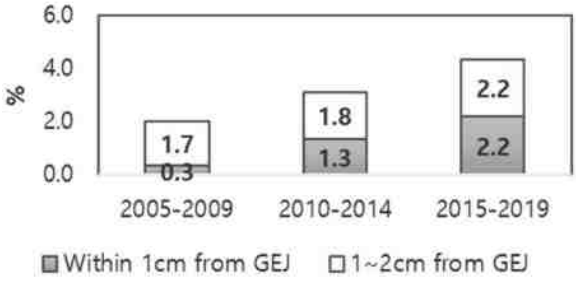
Methods : We reviewed medical records and endoscopic findings of patients who had undergone endoscopic resection at Seoul St. Mary's Hospital from 2005 to 2019. To compare the atrophy, we identified the Kimura classification and the pepsinogen I/II ratio. We defined gastroesophageal junction (GEJ) as distal end of palisade vessel. The location of tumor epicenter within 1cm from GEJ was classified as group A, within 1~2cm as group B, 2~5cm as group C.

Results : The proportion of GE neoplasms (group A and B) increased over time (2005-2009, 2.0%; 2010-2014, 3.1%; 2015-2019,4.3%; P<0.05). This increase was mainly associated with an increase of group A (Figure 1). Age, sex and smoking history did not differ among groups, but obesity was significantly higher in group A. Endoscopic atrophy was more common in group B and C. Closed-type of atrophy was 47% in the group A. Pepsinogen I/II ratio of group A was higher compared to group B and C. The rate of *Helicobacter pylori* infection was also significantly lower in group A.

Conclusions : Recently, the incidence of GEJ neoplasms has increased in Korea. The increase in GEJ neoplasms was associated with an increase in neoplasms 'within 1 cm' from GEJ. GEJ neoplasms were associated with obesity and without atrophy (non-*H. pylori* related).

Key words : Gastroesophageal Junctional Neoplasm, Endoscopic Resection, Epidemiology

Fig 1. Increasing trend of GEJ in the primary site of endoscopic resected neoplasm



PD-069

The efficacy analysis of the novel type integrated knife for endoscopic submucosal dissection in early gastric cancer

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Purpose : Variable endoscopic knives were developed for ESD in EGC. The efficacy of recently introduced combining needle and insulated tipped knife were com-

pared to widely used knives.

Methods : From May 2017 to April 2019, 105 patients with 108 lesions had been diagnosed EGC and undergo ESD in National health insurance service Ilsan hospital. Two different combination of knives were used for procedures. We compared several indicators for oncologic outcomes and technical success of ESD

Results : Fifty six EGC lesions were treated by using needle type knife (Olympus Inc.) with Insulated tipped-2 (Olympus Inc.) alternately, another 52 EGCs were dissected by combined needle type and insulated tipped type knife (FINEMEDIX co., Ltd.). Distribution of tumor location (lower third 33 *vs.* 27, mid third 20 *vs.* 22 and upper third 3 *vs.*3), composition of undifferentiated type of EGCs (3.6 % *vs.* 3.8 % P=0.940) and the size of the cancer (14.3 ± 8.0 mm *vs.* 16.6 ± 7.3mm; P=0.130) were not different. Complete resection rate (98.2 % *vs.* 94.2 % P=0.273) and curative resection rate (87.5% *vs.* 88.5%, P=0.878) were not statistically different. Total procedure time (39.0 ± 34.1 *vs.* 35.7 ± 20.1 minutes; P=0.554), area of dissected specimen (858.6 ± 406.5 *vs.* 980.3 ± 393.8 mm2; P=0.119), dissected area per minute (32.4 ± 17.9 *vs.* 35.5 ± 16.2 mm2/min; P=0.345) were also not different. Overall major complication rates were not statistically different within two groups (5.4% *vs.* 9.6%; P=0.168).

Conclusions : Novel type hybrid knife is as useful as combination of classical knives in ESD for EGC.

Key words : Hybrid Knife, Early Gastric Cancer, Endoscopic Submucosal Dissection

PD-070

Long-term outcomes of patients with gastric adenoma in Korea

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Purpose : New endoscopic resection techniques are constantly being developed for gastric adenoma, which can be classified as low or high grade according to the Vienna classification. However, long-term data on gastric adenoma (e.g., removal or follow-up after resection via endoscopy) remain lacking. We investigated long-term outcome of gastric adenoma after endoscopic resection and risk factors for recurrence.

Methods : We retrospectively analyzed 133 cases with gastric adenoma that underwent endoscopic resection from January 2010 to November 2018 at Haeundae Paik Hospital, Inje University School of Medicine, Busan, Korea. One hundred six (79.7%) and 27 patients (20.3%) received endoscopic resection once and more than twice, respectively.

Results : Compared with the initial endoscopic biopsy pathological results, the upgraded and downgraded histological discrepancy rates were 10.5% (n=14) and 3.0% (n=4) after resection, respectively. The mean time to recurrence was 2.23 years. The most common endoscopic gross finding was flat lesions (58.6%). The lesions were found frequently in the antrum (52.6%; long axis) and lesser curvature (39.8%; short axis). Eleven (8.3%) and 16 patients (12.0%) had recurred synchronous and metachronous lesions, respectively. In the multivariate cox analysis of the recurrence group, intestinal metaplasia (hazard ratio, 2.761; 95% confidence interval, 1.117-6.820; P=0.028) and lesion size (hazard ratio, 1.607; 95% confidence interval, 1.082-2.385; P=0.019) were independent factors for receiving endoscopic resection more than twice.

Conclusions : If patients have severe intestinal metaplasia or large size of lesion at endoscopic resection for gastric adenoma, periodic observation is necessary.

Key words : Gastric Neoplasm, Risk Factors, Recurrence

PD-071

Long-term outcomes of endoscopic submucosal dissection for superficial esophageal squamous cell carcinoma: A comparison study of a surgical cohort using propensity score matching

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Purpose : Endoscopic submucosal dissection (ESD) has become the main treatment modality for superficial esophageal squamous cell carcinoma (SESCC). However, only few studies have compared long-term outcomes of ESD with surgical outcomes. This study compared the overall survival (OS), recurrence-free survival (RFS), and complication rate of ESD with those of surgery.

Methods : We retrospectively reviewed patients who underwent ESD (n=71) and surgery (n=188) for SESCC in the Seoul National University Hospital from January 2005 to December 2017. To reduce selection bias, propensity score-matched analysis was used to compare OS and RFS between two treatment modalities.

Results : In 37 matched pairs, OS and RFS were comparable between the ESD and surgery groups. The 5-year OS rates were 92.9% versus 91.2% for the ESD and the surgery groups, respectively; similarly, the 5-year RFS rates were 94.6% and 94.1%, respectively. For all patients, subgroup analysis according to the depth of invasion suggested comparable OS and RFS between both groups. Even in Tis-SESCC, ESD showed better OS than did esophagectomy (P=0.045). The ESD group showed lower overall complication rate [22.0% (13 of 59) versus 49.0% (73 of 149), P<0.001] and shorter hospital stay (median, 3.0 days vs 19.0 days, P<0.001) than did the surgery group.

Conclusions : Long-term outcomes of ESD are comparable with surgery in patients with SESCC. In terms of complication and hospital stay, ESD is a better treatment option than radical surgery. These results support ESD as the preferred treatment option for SESCC.

Key words : Superficial Esophageal Squamous Cell Carcinoma, Endoscopic Submucosal Dissection, Long-term Outcome

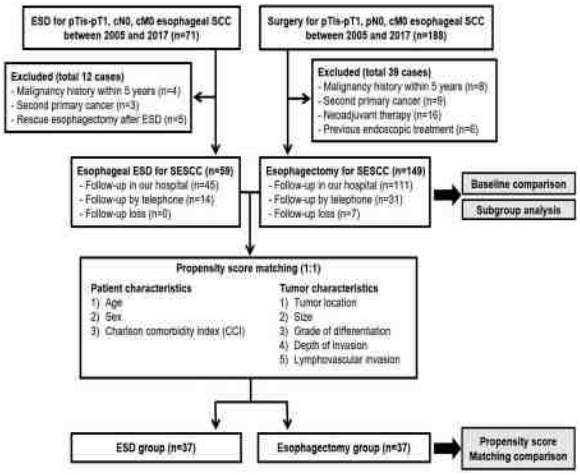

Figure 1. Flow diagram of patients who underwent endoscopic submucosal dissection (ESD) or surgery for superficial esophageal squamous cell carcinoma (SESCC). SCC, squamous cell carcinoma

Table 1. Characteristics of patients with endoscopic submucosal dissection (ESD) and surgery for superficial esophageal squamous cell carcinoma (SESCC).

Variable	Before propensity score matching			After propensity score matching		
	ESD (n=59)	Surgery (n=149)	*P* value	ESD (n=37)	Surgery (n=37)	*P* value
Age, mean ± standard deviation (SD), years	66.8 ± 8.1	63.7 ± 8.1	0.372	66.0 ± 7.8	66.4 ± 8.2	0.841
Sex, n (%)						
Male	53 (89.2)	134 (89.9)	0.438	34 (91.9)	35 (94.7)	1.000
Female	4 (6.8)	15 (10.1)		3 (8.1)	2 (5.4)	
Charlson comorbidity index (CCI), n (%)						
0	40 (67.8)	95 (63.8)	0.849	25 (67.6)	24 (64.9)	1.000
1	13 (22.0)	38 (25.5)		9 (24.3)	9 (24.3)	
≥2	6 (10.2)	16 (10.7)		3 (8.1)	4 (10.8)	
Tumor location, n (%)						
Upper	2 (3.4)	6 (4.0)	0.681	1 (2.7)	1 (2.7)	0.900
Middle	24 (40.7)	51 (34.2)		11 (29.7)	13 (35.1)	
Lower	33 (55.9)	92 (61.7)		25 (67.6)	23 (62.2)	
Tumor size, mean ± SD, cm	1.7 ± 0.8	2.0 ± 1.4	<0.001	1.9 ± 1.0	2.0 ± 1.0	0.763
Differentiation, n (%)						
G1 (Well-differentiated)	50 (84.7)	42 (28.2)	<0.001	28 (75.7)	28 (75.7)	1.000
G2 (Moderately differentiated)	9 (15.3)	98 (65.8)		9 (24.3)	9 (24.3)	
G3 (Poorly differentiated)	0 (0.0)	9 (6.0)		0 (0.0)	0 (0.0)	
Depth of invasion, n (%)						
Tis (EP, epithelium)	30 (50.8)	15 (10.1)	<0.001	11 (35.1)	13 (35.1)	1.000
T1a (LP, lamina propria)	14 (23.7)	28 (18.8)		12 (32.4)	12 (32.4)	
T1a (MM, muscularis mucosae)	10 (16.9)	32 (21.5)		7 (18.9)	8 (21.6)	
T1b (SM1, submucosa invasion ≤ 200 μm)	2 (3.4)	15 (10.1)		2 (5.4)	2 (5.4)	
T1b (SM2, submucosa invasion > 200 μm)	3 (5.1)	59 (39.6)		3 (8.1)	2 (5.4)	
Lymphovascular invasion positive, n (%)	4 (6.8)	15 (10.1)	0.438	2 (5.4)	2 (5.4)	1.000
Resection margin positive, n (%)	9 (15.1)	7 (4.7)	0.018	7 (18.9)	1 (2.7)	0.036
Adjuvant therapy, n (%)						
Endoscopic treatment	2 (3.4)	1 (0.7)	0.018	0 (0.0)	0 (0.0)	0.107
Chemotherapy	0 (0.0)	3 (2.0)		0 (0.0)	1 (2.7)	
Radiation therapy	7 (11.9)	2 (1.3)		6 (16.2)	1 (2.7)	

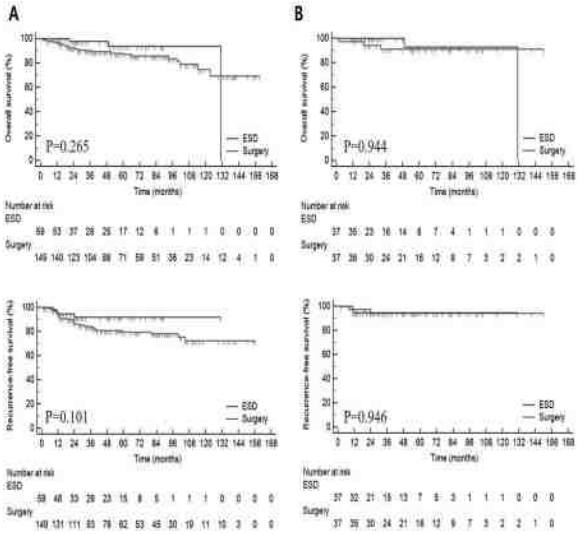

Figure 2. Overall survival (OS) and recurrence-free survival (RFS) of endoscopic submucosal dissection (ESD) and surgery in all patients (A) and in propensity score-matched patients (B).

Table 2. Comparison of hospital stay and adverse events in the two groups.

Variable	ESD (n=59)	Surgery (n=149)	*P* value
Hospital stay, median (IQR), days	3.0 (2.0-4.0)	19.0 (15.0-26.0)	<0.001
Overall adverse events, n (%)	13 (22.0)	73 (49.0)	<0.001
Early adverse events, n (%)	9 (15.3)	50 (33.6)	0.008
	Procedure complication Microperforation 7 Maroperforation, 1 Bleeding, 1	**Surgical complication** Vocal cord palsy, 21 Anastomotic leakage, 9 Wound dehiscence, 6 Wound infection, 1 Pylorus narrowing, 2 Small bowel infarction, 1 Chyloperitoneum, 1 Neck bleeding, 1 **Medical complication** ARDS, 5 Pneumonia, 7 Atrial fibrillation, 7 Acute kidney injury, 1	
Late adverse events, n (%)	5 (8.5)	29 (19.5)	0.053
	Stricture, 5	Stricture, 23 Fistula, 4 Recurrent ileus, 4 Diaphragmatic hernia, 1 Dumping syndrome 1	

PD-072

Analysis of factors associated with local recurrence after endoscopic resection of gastric epithelial dysplasia

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Purpose : Endoscopic mucosal resection (EMR) and endoscopic submucosal dissection (ESD) are widely used techniques for the treatment of gastric epithelial dysplasia. Previous studies have compared the clinical outcome of endoscopic resection for early gastric cancer, but few studies have focused on gastric dysplasia alone. This study aimed to evaluate the long-term prognosis following endoscopic procedures for gastric epithelial dysplasia, investigate differences in local recurrence rates according to the treatment modality, and identify risk factors associated with local recurrence.

Methods : In this retrospective study, local recurrence rates and risk factors associated with local recurrence were compared between 599 patients who underwent EMR and 306 who underwent ESD for gastric epithelial dysplasia from January 2011 to December 2015.

Results : The en bloc resection rate (32.2% vs. 100%, P<0.001) and complete resection rate (94.8% vs. 99.0%, P=0.003) were significantly lower in the EMR group than in the ESD group. The local recurrence rate was significantly lower in the ESD group (1.3%) than in the EMR group (4.2%; P=0.026). There was a significantly increased risk of local recurrence, regardless of lesion location or histologic grade, in patients with lesions >2 cm (P=0.002) or red in color (P=0.03). The ESD group had a significantly lower local recurrence rate, with a higher complete resection rate, than that in the EMR group (P<0.05).

Conclusions : The complete resection rate was significantly higher, and the local recurrence rate was significantly lower, in patients with gastric epithelial dysplasia treated with ESD. Therefore, ESD should be considered the preferred treatment in patients with lesions >2 cm or showing redness due to an increased risk of local recurrence.

Key words : Gastric Dysplasia, Endoscopic Treatment, Local Recurrence

PD-073

Accuracy of endoscopic ultrasound for superficial esophageal cancer

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Purpose : Endoscopic submucosal dissection (ESD) is one of the curative treatment options for superficial esophageal cancer with minimal risk of lymph node metastasis. Prior to ESD, accurate clinical staging is important to select the appropriate candidate. We aimed to estimate the practicality of endoscopic ultrasound (EUS) to determine clinical T stage.

Methods : We included superficial squamous esophageal cancers treated with surgical resection or ESD between 2005 and 2018. Pathologic reports were reviewed retrospectively and pathologic T staging was compared to clinical stage evaluated by EUS.

Results : Among 532 cases, 321 cases were superficial esophageal cancer (pTis; 42, pT1a; 115, pT1b; 164). Accuracy rates, sensitivity, specificity, positive predictive value, and negative predictive value for selecting cT1a by EUS was 82.3%, 60.5%, 91.5%, 74.80%, and 84.69% respectively. The overestimation rate of pT1a was 48.7%. In multivariable analysis, tumor size (>2 cm), poor differentiation, protruding gross type, use of conventional EUS were associated factors for overestimation of pT1a. (Table1)

Conclusions : Although prediction accuracy of the T stage in superficial esophageal cancer with EUS was favorable, considerable overestimation rate was identified. Large size (>2cm), poor differentiation, protruding morphology and use of conventional EUS were related to overestimation of T stage and precaution should be taken in evaluating clinical stage for cancers with those conditions.

Key words : Endoscopic Ultrasound, Superficial Esophageal Neoplasm, Endoscopic Submucosal Dissection

Table 1. Accuracy rate for selecting cT1a using EUS

	cT1a	cT1b-T4	Total
pT1a	95	62	157
pT1b-T4	32	343	375
Total	127	405	542

Accuracy: 82.33% [0.7882-0.8548]

Sensitivity: 60.51% [0.5241-0.6821]

Specificity: 91.47% [0.8879-0.9355]

Positive predictive value: 74.80% [0.6756-0.8089]

Negative predictive value: 84.69% [0.8081-0.8806]

Table 2. Associated factors for overestimation of pathologic T1a esophageal cancers for pretreatment T staging by EUS

Variables	Overestimation Multivariable OR	95% CI	P value
Size			
≤2 cm	1 (ref)		
>2 cm	2.193	1.004-4.794	0.049
Histology			
HGD	1 (ref)		
SqCC W/D	4.543	1.393-14.817	0.012
SqCC MP/D	4.918	1.572-15.389	0.006
Gross			
Superficial	1 (ref)		
Ulcerative	1.392	0.496-3.910	0.530
Protruding	11.662	1.102-123.447	0.041
Location			
Upper/middle	1 (ref)		
Lower/GE junction	2.174	0.945-5.002	0.068
Probe			
Miniprobe	1 (ref)		
Conventional	4.176	1.766-9.879	0.001

PD-074

Is gastrin level associated with synchronous colon adenoma in patients with gastric adenoma/cancer?

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Purpose : Several studies showed an association between colorectal adenoma and gastric adenoma or cancer. Regarding the mechanism underlying the development of synchronous neoplasms of the stomach and colorectum, there is evidence that gastrin may play a role in the promotion of colon carcinogenesis in humans. We aimed to investigate gastrin level according to synchronous colon adenoma in gastric adenoma or cancer patients.

Methods : From January 2018 through May 2019, we compared the serum pepsinogen I, II, and gastrin level according to the presence of colorectal adenoma in 76 patients who underwent endoscopic resection for gastric adenoma or cancer.

Results : Pepsinogen I, pepsinogen II, and pepsinogen I/II ratio was 66.3±58.9, 25.8±17.5, and 2.8±2.6, respectively in patients with colorectal adenoma, and 86.2±195.8, 22.3±14.1, and 3.4±3.9, respectively in patients without colon adenoma. There was no difference in pepsinogen I, II and I/II ratio between two groups. Gastrin levels were 97.3±82.6 in patients with colorectal adenoma, and 88.9±78.2 in patients without colon adenoma. There was no difference in gastrin levels between the two groups.

Conclusions : In patients with gastric adenoma or cancer, there was no difference in pepsinogen I,II or gastrin level according to synchronous colon adenoma.

Key words : Gastrin, Gastric Adenoma, Colon Adenoma

PD-075

Prospective association of low dose alcohol intake on the risk of stomach cancer: A Nationwide population-based long term follow up study

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Purpose : Even high dose alcohol ingestion is well-known risk factor for gastric cancer, there is limited data regarding the effect of low dose of alcohol ingestion on the development of stomach cancer. We aimed to evaluate the effect of light drinking on the risk of stomach cancer using nationwide long term follow-up study.

Methods : We used data from the Korean health examinee (HEXA) study (2004-2013 at baseline, and 2012-2017 at follow up). After exclusion of participants with moderate to excessive alcohol ingestion (>20 g of alcohol /day for men and >10 g of alcohol/day for women), we divided the participants into never drinker and light drinker group (<10 g of alcohol /day for men and women) comparing the risk of stomach cancer at follow up between groups in univariate and multivariate analysis.

Results : Of 52,322 participants (never drinker: n=39,798; light drinker: n=12,524), 129(0.3%) vs 55(0.5%) of incidental cases were newly developed into stomach cancer from never drinker group vs light drinker group (P=0.01). Light drinking was statistically significantly associated with the risk of stomach cancer (Hazard ratio =1.6 [1.1-2.5], P<0.01) in multivariable analysis even after adjusting for the confounding factors including diet (total calorie intake, total lipid intake, and total protein intake), exercise pattern, smoking, body mass index, family history of cancer, medical history (diabetes mellitus, hypertension, and dyslipidemia), and socioeconomic factors.

Conclusions : Since even light drinking is independently associated with risk of stomach cancer, physicians keep in mind that patients with at risk of stomach cancer should be abstinent from alcohol strictly.

Key words : Stomach Cancer, Light Drinking, Nation Wide Study

PD-076

Characteristics of ectopic sebaceous glands of the esophagus

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Purpose : Ectopic sebaceous glands are rarely found on the esophagus, and their epidemiology, causes and prognosis are still unknown. We began this study to find the epidemiology and clinical features of esophageal ectopic sebaceous glands found within Jeju Island over the last three years.

Methods : From November 2015 to October 2019, we retrospectively reviewed the medical records of patients with esophageal ectopic sebaceous glands who were confirmed by endoscopic biopsy at the Jeju National University Hospital to identify the location, number of lesions, morphological features, *H. pylori* infection, gastritis, and comorbidities.

Results : In total, eight persons were diagnosed in three years. Male to female ratio is 5: 3, mean age 53 years old (44-66 years old), BMI 25.7kg/m2, height 167.0 cm, weight 66.5 kg. Five persons smoked (62.5%), and five out of the six patients who received the *H. pylori* test were diagnosed as positive. Three of eight persons have superficial gastritis and the remaining five persons have atrophic gastritis or intestinal metaplasia. The endoscopic findings were scattered multiple yellowish granular surfaced plaques less than 1 mm and sometimes have large plaques over 1-2 mm, and showing the typical "gold dust appearance". The lesions located average 34 cm from the upper incisors, along the 1-2 cm segment of the esophageal lumen.

Conclusions : Ectopic sebaceous glands of the esophagus showed the typical "gold dust appearance" on the lower esophagus. Although the clinical significance is still unclear, the prevalence is thought to be higher than previously known.

Key words : Esophagus, Sebaceous Gland, Ectopic

PD-077

Clinical impact of postgastrectomy sarcopenia on the prognosis in patients with gastric cancer

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Purpose : The purpose of this study was to investigate the risk factors and the clinical impact of newly developed sarcopenia after surgical resection on the prognosis in patients undergoing radical gastrectomy for gastric cancer (GC).

Methods : We retrospectively reviewed clinicopathological data from 430 consecutive GC patients who underwent surgical resection at Chung-Ang University Hospital. Their skeletal muscle mass and abdominal fat volume were measured by abdominal CT imaging.

Results : A total of 425 patients were analyzed in the study. The mean age was 62 years old and male were 301 (70.8%). Of these, 42 patients (9.9%) were diagnosed as pre-operative sarcopenia. Compared with non-sarcopenic group, pre-operative sarcopenia groups showed more female, higher BMI, less alcoholic, and less smoking. However, there was no significant difference in 5 - year overall survival and disease free survival between the groups (P=0.836 and P=0.638, respectively). Among 381 non-sarcopenic patients, 48 patients (12.6%) were diagnosed as newly developed sarcopenia in one year after gastric resection. Compared with non-sarcopenic group, the newly developed sarcopenic group showed more male, more undifferentiated tumor, lower hemoglobin level, less alcoholic, less smoking, and presence of diabetes mellitus. However, there was no significant difference in the 5 - year overall survival and disease free survival among non-sarcopenic, sarcopenic, and newly developed sarcopenic groups (P=0.521 and P=0.534, respectively).

Conclusions : Although newly developed sarcopenia after surgery did not affect the survival rate, patients with nutritional risk of sarcopenia after surgical resection may require early evaluation of nutritional status and nutritional support.

Key words : Gastric Cancer, Sarcopenia, Nutrition

PD-078

Narrow band imaging with magnifying endoscope in gastric precancerous conditions

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Purpose : To compare detection rates of gastric precancerous conditions by high definition white light endoscopy (HD-WLE) and NBI-ME

Methods : This was hospital based cross-sectional comparative study including chronic dyspeptic patients aged over 50 years. Esophagogastroduodenoscopy examination was performed using both HD-WLE and NBI-ME and detection rates of AG and GIM were measured.

Results : Total 143 patients (55 male and 88 female) with mean age 64.57 ± 9.957 years were included. *Helicobacter pylori* infection rate was 53.84%. AG was detected in 32 patients (22.4%) by HD-WLE and in 35 patients (24.5%) by NBI-ME. GIM was detected in 26 patients (18.2%) by HD-WLE and in 33 patients (23.1%) by NBI-ME. There is statistically significant difference in detection rates of NBI- ME and HD-WLE for GIM. However, for AG, there is no statistical difference between two methods. NBI-ME has overall sensitivity of 70.3% and specificity of 96.2% for AG and sensitivity of 89.4% and specificity of 95.3% for GIM.

Conclusions : NBI-ME increased the detection rate of gastric precancerous conditions compared with HD-WLE.

Key words : Gastric Precancerous Conditions, Narrow Band Imaging, Magnifying Endoscope

PD-079

Assessing tumour infiltrating lymphocytes in Haematoxylin Eosin stained pre-treatment biopsies from oesophageal cancer: A practical approach

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Purpose : To provide recommendations for the assessment of tumour infiltrating lymphocytes (TILs) in routine endoscopic biopsies (BPs) from oesophageal cancer (OeC) patients.

Methods : Haematoxylin/Eosin (HE) stained slides from 305 OE02 trial patients (937 BPs) were reviewed independently by two observers. We scored %area covered by TILs in stroma (sTILs) and tumour cell compartment (tuTILs) semiquantitatively as incremental parameter (e.g. 0%, 10%, 20%... 100%) or as unclassifiable following international TILs scoring guidelines. Observer discordance was defined as absolute score difference greater than 10. Discordant BPs were jointly reviewed and rescored. Inter-observer variability (InterVar) was analysed. Reasons for unclassifiability and deviation from the original TIL scoring guidelines were analysed.

Results : BPs from 291 OeC patients were classifiable. The reasons for unclassifiability were uncertainty of TILs location, artefacts, low stroma or tumour content per BP or morphological similarity of tumour cells and TILs. InterVar ranged from 78.0% to 92.1%, κ values from 0.66 to 0.88, depending on compartments, using 10% increments or dichotomised data or comparing BP or patient aggregated data.

Conclusions : This is the first study demonstrating that tuTILs and sTILs can be assessed reproducibly in routine HE stained BPs from OeC patients. Our study suggests that some routine endoscopic biopsies might be unclassifiable emphasising the need for enough high quality tumour-containing biopsies. After establishing recommendations on how to best assess TILs in OeC, studies are now underway to investigate the clinical value of TIL assessment in the pre-treatment biopsy of OeC patients.

Key words : Oesophageal Cancer, Tumour Infiltrating Lymphocytes, Interobserver Variability

PD-080

Epidemiology and clinical characteristics of esophageal cancer: Ten year's experience of a tertiary care hospital Karachi, Pakistan

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Purpose : Esophageal cancer (EC) is an aggressive tumor that carries a poor prognosis. EC is the fourth commonest malignant tumor reported in Pakistan. Objective of this study was to assess epidemiological and clinical characteristics of esophageal cancer, identified over a 10-year period at the largest referral centre of Karachi, Pakistan.

Methods : This was a retrospective study included all histopathologically diagnosed cases of esophageal carcinoma from endoscopic biopsy, over the 10-years period from January 2010 to 20th December 2019.

Results : Over the period of 10 years, 1066 patients with EC had been identified, 57 patients were excluded due to incomplete records. Their ages ranged from 15 to 92 years with a mean of 49.26 ±14.24 years. Female were 566 (56.1%) and male 443 (43.9%). Dysphagia and weight loss were the most common symptoms. Most of the patients were belonging to the province of Sindh 849 (84.1%). Beetle nuts, pan and gutka were the most predominant risk factors in 768(76.1%) of patients. The most common EC type was squamous cell carcinoma 834(83%) followed by Adenocarcinoma 175 (17%) of patients. EC predominantly involved mid to distal esophagus (67%).

Conclusions : EC is the most prevalent cancers in Pakistan, and its incidence is increasing day by day. The reason for raised incidence was associated with increased consumption of beetle nuts and gutka in certain parts of the country. This study will be an important step towards developing a comprehensive law against consumption of gutka and beetle nuts.

Key words : Esophagus, Squamous Cell Carcinoma, Adenocarcinoma

PD-081

An epidemiological study of risk factors, types & associations of gastric carcinoma in Karachi, Pakistan

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Purpose : Gastric carcinoma (GC) is an aggressive tumor that carries a poor prognosis. GC is the 9th commonest cancer reported in Pakistan. The aim of this study was to assess the risk factors, clinical characteristics and GC's sub-types, seen at a premier tertiary care hospital in Karachi, Pakistan.

Methods : This retrospective study included all histopathologically confirmed cases over a period of 5 years from April 2015 to April 2019. The data was analyzed using SPSS v21.

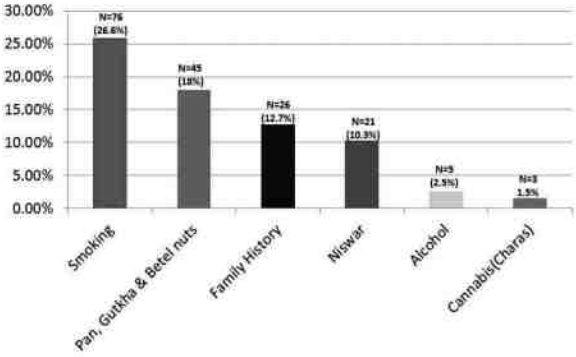
Results : A total of 255 cases were identified, out of which 229 (89.8%) were adenocarcinoma (AC). In these 229 cases of AC; Male were 154 (60.6%) and female were 101 (39.4%). Their ages ranged from 19 to 95 years with a mean of 50.6±13.7. Epigastric pain and vomiting were the most common symptoms. Ascites was seen in 37 (31.9%). Most of the patients were belonging to the province of Sindh 193 (84.2%). Cigarette smoking was the most prominent risk factor in 76 (26.6%), followed by consumption of beetle nuts, pan and gutka 45 (18%). AC predominantly involved gastric antrum and pylorus 187 (73.3%).

Conclusions : AC has shown an increasing prevalence in the country in the recent few years; despite being a low risk region, largely due to the increased habit of cigarette smoking and consumption of substances such as betel nuts. This study is hoping to accomplish awareness regarding this disease, take measures to prevent it and reduce the burden of this disease.

Key words : Gastric Carcinoma, Adenocarcinoma, Smoking

Gender (N=255)

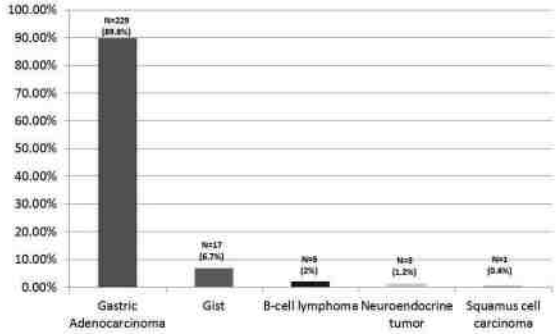
Risk Factors (N=255)



Symptoms

Symptoms	N(%)
Epigastric pain	104 (51%)
Vomiting	89 (43.6%)
Weight loss	48 (23.5%)
Dysphagia	40 (19.6%)
Decrease appetite	37 (18.2%)
Constipation	28 (13.7%)
Generalized weakness	25 (12.3%)
Abdominal distension	20 (9.8%)
Hematemesis	19 (9.3%)
Nausea	19 (9.3%)
Heart burn	16 (7.9%)
Fever	14 (6.9%)
Abdominal pain	13 (6.4%)

Types



PD-082

A case report of gastric pyloric gland adenoma in a 75-year-old Filipino female

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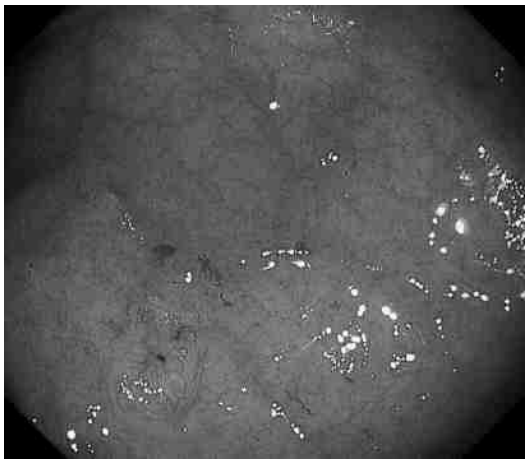
Contents : A 75-year old Filipino female consulted due to chronic intermittent epigastric pain associated with reflux and bloating of four years. She is a known hypertensive with a paternal family history of gastric cancer. Physical examination was unremarkable. Screening endoscopy was normal. Interim she was given proto pump inhibitors that improved symptoms. Patient then sought consult for surveillance endoscopy. Surveillance gastroscopy showed multiple flat polyps which appeared pale on narrow band imaging at the cardia and a 0.5 cm slightly elevated polyp at the proximal body. Biopsy of the gastric polyp revealed chronic inflammation, polypoid oxyntic mucosa. She was then advised repeat endoscopy after six months which showed multiple flat polyps at the cardia and fundus. A 0.5 cm slightly elevated erythematous polyp with reticular gastric pits (0-IIb; JNET type 2A) was also seen at the cardia and removed by polypectomy. Chromoendoscopy with indigo carmine showed well demarcated lesion with regular surface. Biopsy revealed a gastric pyloric gland adenoma which was positive for p53 immunostaining. Pyloric gland adenoma (PGA) is rare accounting only for 2.7% in all gastric polyps. This is commonly found in elderly females. It is a premalignant lesion that transforms into adenocarcinoma in 30% of the cases. Histopathology shows tightly packed tubular glands lined with cuboidal or columnar cells that stain positively with p53. On endoscopy PGA's may present as polypoid, fungating, or dome shaped mass. Management for these lesions include regular surveillance due to its high risk for malignant transformation.

Key words : Gastric Pyloric Gland Adenoma, Premalignant, Endoscopic Finding



White light imaging showing a 0.5cm slightly elevated lesion

Chromoendoscopic image showing a well demarcated lesion

Narrow band imaging magnifying lesion with reticular pits

PD-083

Duodenal adenocarcinoma: Initial surgical results at a single center

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Purpose : Duodenal adenocarcinoma is a rare malignancy. There is limited data related to surgical results. The objective is to analyze results at a single center after the curative resection of duodenal adenocarcinoma.

Methods : The variables were retrospectively collected from patients operated on between 2015 and 2020 at a single center.

Results : A total of 5 patients were operated. Three patients (60%) underwent pancreaticoduodenectomy, and 2 patients (40%) with tumors located in the third portion of the duodenum underwent segmental duodenal resection. The overall postoperative morbidity was 80% (4 patients) including 2 cases of pancreatic fistula grade B and 1 case of bleeding from gastroduodenal artery. No postoperative mortality. All patients had negative resection margins. Median follow up was 25 (8-59) months. The overall survival was 39.2 (14.3-58.2) months. The disease-free survival was 32 (0-57) months.

Conclusions : The surgical treatment of duodenal adenocarcinoma is associated with a high morbidity, although it achieves considerable survival.

Key words : Duodenal Adenocarcinoma, Pancreaticoduodenectomy, Segmental Duodenal Resection

PD-084

Molecular study and chemical profiling of quassin for the development of novel medicine against gastric ulcer: Medicinal importance and phytochemical approach

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Purpose : Ulcer is developing through damage caused by the gastric juice and other digestive enzymes that are produced by the stomach. H+/K+-ATPase and urease

enzymes inhibitors are better choice to treat peptic ulcer.

Methods : Present work describe the importance of quassin for the treatment of peptic ulcer through inhibitory activity of urease and H+/K+-ATPase enzymes with other inflammatory mediators. All the data have been collected and analyze for their anti-ulcer activity. Molecular mechanism was also studied in order to understand the binding interaction of the quassin for the development of better medicine against peptic ulcer.

Results : Quassin is the first member of quassinoids class chemical mainly extracted from the *Quassia amara* bark. Quassin is a white colour crystalline substance having bitter taste. Quassin is widely used to generate bitter taste in various beverages. From the analysis of the literature data it was found that quassin had significant anti-ulcer activity. Molecular study revealed the importance of H+/K+-ATPase enzymes and other inflammatory mediator in peptic ulcer. Molecular simulation study further support the binding interaction of the quassin in the active site of enzyme.

Conclusions : Present studies describe the anti-ulcer activity of quassin which will be beneficial for the developemnt of natural medicine against various form of digestive disorders.

Key words : Peptic Ulcer, Enzyme, Natural Medicine

PD-085

Visnagin for the treatment of gastritis and oxidative stress through interaction on nuclear factor kappa B, soluble epoxide hydrolase, SOD, and catalase: Physiological functions through in-vivo and molecular simulation study

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Purpose : Visnagin is used for the treatment of oxidative stress and well known for its anti-inflammatory activity which also treat ureter and bile duct, gall bladder and renal colic.

Methods : In order to know the importance of visnagin for the treatment of gastric inflammation and oxidative stress, present work summarizes data's analysis of visnagin to point out the importance of visnagin for the treatment of gastritis and oxidative stress. Data analysis of the presented data of various scientific works has been also carried out to make better correlation. Molecular simulation and dynamic study were carried out with visnagin through nuclear factor kappa B, soluble epoxide hydrolase, super oxide dismutase (SOD) and catalase. Effect of visnagin through oxidative stress in gastric cell was also analyzed and co-related for the development of molecule against gastritis.

Results : Data analysis of the scientific work revealed the importance of visnagin for the prevention of gastritis and oxidative stress which further signified their beneficial effect for the gastric ulcer. Effect of visnagin was also found to be significant and play an important role in the prevention of gastritis and peptic ulcer. Molecular simulation study showed better interaction with nuclear factor kappa B, SOD and catalase as binding energy of visnagin with all the ligands was found to be minimum and negative. Molecular docking study supports the *in-vivo* and *in-vitro* data to make better molecular mechanism for their effectiveness against peptic ulcer.

Conclusions : The presented information will be beneficial for the development of alternative tools to treat gastric ulcer in the future.

Key words : Gastric Ulcer, Oxidative Stress, Nuclear Factor Kappa B

PD-086

Early detection of ulcer disease through the tongue using the Radial Basis Function Network (RBFN) Method on Android-Based Smartphones

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Purpose : In general, to detect ulcer disease, the doctor asks what symptoms occur to the patient, then the doctor performs a physical examination such as endoscopy, which uses an endoscope in the form of a small instrument similar to a hose equipped with a camera and inserted into the esophagus to the stomach, to see whether inflammation has occurred in the stomach wall or not.

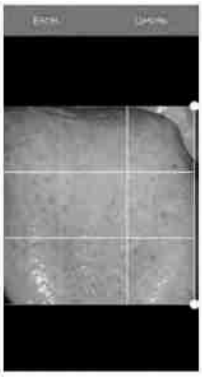
In this study, the authors made the detection of ulcer disease based on tongue images by applying the Radial Basis Function Network approach.

Methods : The Radial Basis Function Network approach uses Color Histogram feature extraction to extract features from the color of the tongue image and the Gray Level Co-occurent Matrix to extract texture features from the tongue image to detect ulcer disease. The steps of the network training process using the RBF method are 1) Initializing the center of the normalized matrix input data and the center of the K-Means Clustering calculation results, 2) Initializing the spread value, 3) Determining the input signal to the hidden layer and calculating the value of its activation function at each hidden layer, 4) Calculate the new weight by multiplying the pseudoinverse, 5) Calculate the value of the network output, and 6) Save the value of the training results that will be analyzed.

Results : The results of identification (on application) are displayed in the form of a percentage indication of ulcer disease, if the percentage is more than 30 percent, then indicated ulcer disease.

Conclusions : The application can run according to the purpose.

Key words : Early Detection, Ulcer, Rbfn Method on Smartphone



Tongue image resizing, segmentation, matrix, and vector normalization

Example 82% of identification results stating ulcer disease (Indonesian version application)

PD-087

Ulcer disease diagnosis based on artificial intelligence systems using the heteroassociative memory model

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Purpose : Ulcer disease is a pain that is generally suffered by most Indonesian people and maybe even throughout the world, in dealing with ulcer disease is not too complicated, but here the author tries to analyze with the help of heteroassociative memory methods in diagnosing ulcer disease. This method is one of the methods in artificial neural networks and also part of artificial intelligence that puts pressure on mathematical models or numbers.

Methods : The steps of testing the data in this study are: 1) initialization of beginner weight and final weight, 2) determination of input (X), 3) determination of output, and 4) determination of final value of data (Y). In calculating using the heteroassociative memory method for the assumption value is taken from the rate of $0 \leq x \leq 1$ with its own criteria. In determining the input, determined many types of variables along with their respective codes including 1) the type of disease, 2) symptoms of the disease, 3) disease prevention and 4) treatment of disease where the final result between symptoms and the assumption of the value of each variable will provide type of disease.

Results : The results obtained are binary number models 1111 for Dyspepsia, 0011 for Exogenous Gastritis, 0100

for Endogenous Gastritis, 1101 for Supervisial Gastritis, 1110 for Anthropic Gastritis and 0001 for Hypertropic Gastritis.

Conclusions : From the analysis obtained it can be concluded that by using the heteroassociative memory method there are several models that can be used to diagnose ulcer symptoms.

Key words : Diagnosis, Heteroassociative Memory Model, Ulcer Diasese

PD-088

Clinical effect of sequential treatment with rabeprazole on gastric ulcer

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Purpose : To explore the clinical efficacy of sequential treatment with Rabeprazole on gastric ulcer patients.

Methods : The 84 patients with gastric ulcer who were admitted to our hospital's Department of Gastroenterology and received medical treatment were randomly divided into 2 groups, 42 in each of the experimental group and the control group. Patients in the control group were given rabeprazole + clarithromycin + amoxicillin for 10 days orally; experimental group was given rabeprazole + amoxicillin for 5 days orally, and then rabeprazole + cloxamycin + tinidazole Treatment was performed for 5 days, and the clinical treatment effects of the two groups were compared.

Results : After treatment, the total effective rate of the control group was 94.3%; the *H. pylori* clearance rate was 78.9%. The total effective rate in the experimental group was 95.2%; the clearance rate of *H. pylori* was 92.4%. The clinical treatment effect of the two groups of patients was P> 0.05. The clearance rate of *Helicobacter pylori* was statistically significant (P < 0.05).After 6 months, all patients were followed up, and 8 patients relapsed in the control group. The recurrence rate was 19.05%. There were 3 patients relapsed in the experimental group, with a recurrence rate of 7.14%. The two groups were statistically significant (P <0.05), and there were no adverse drug reactions.

Conclusions : Rabeprazole sequential treatment of gastric ulcer has a significant effect, which is worthy of clinical application.

Key words : Rabeprazole, Sequential Therapy, Gastric Ulcer

PD-089

The polymorphism of CYP2C19 on Vietnamese *H. pylori* (+)ve peptic ulcer disease patients underwent eradication treatment

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Purpose : Identify the distribution of phenotypes of CYP2C19 on *H. pylori* (+)ve peptic ulcer disease patients who underwent eradication treatment at Nguyen Tri Phuong hospital

Methods : This is a cross-sectional study

Results : We recruited 251 patients with the mean age 43.04. The mutation m1 on exon 5 accounts for 28.69%. The percentage of phenotypes of CYP2C19 is 7.57% for poor metabolizer (PM); 49% for intermediate metabolizer (IM) and 43.43% for extensive metabolizer (EM). Poor metabolizer is more common in female with OR = 5.064 (95% CI: 2.201 - 7.108, P<0.05). Extensive metabolizer phenotype accounts for 47.83% in successful eradicated patients whereas only 39.71% cases are extensive metabolizer in failure eradicated patients (P >0.05, Chi square test)

Conclusions : In Vietnamese patients with past history of peptic ulcer disease due to *H. pylori* infection and underwent at least one eradication regimen, poor metabolizer phenotype accounts for only less than 10%. There is a relationship between female sex and poor metabolizer phenotype. There are no significant differences in the distribution of various phenotypes of CYP2C19 between successfully eradicated patients and failure eradicated patients.

Key words : Cyp2c19, *H. pylori* Infection, PPI

PD-090

DNI as a predictor of disease severity, surgical outcomes, and mortality rates in gastrointestinal diseases: Diagnostic test accuracy

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Purpose : Delta neutrophil index (DNI) is the ratio of the number of immature granulocytes and the total neutrophil count in peripheral circulation. DNI precedes changes in white blood cell or neutrophil counts due to the course of granular leukocyte differentiation in infectious and inflammatory conditions, beginning with immature granulocyte formation. The role of DNI as a biomarker of various infectious or inflammatory conditions has been reported. However, no studies explored the potential role of DNI as an initial biomarker for predicting disease severity, surgical outcomes, and mortality rates of gastrointestinal diseases with pooled diagnostic test accuracy. This study aims to provide evidence that DNI is a predictor of disease severity, surgical outcomes, and mortality rates in patients with gastrointestinal diseases in emergency departments.

Methods : MEDLINE, EMBASE, and the Cochrane Library were searched using common keywords (inception to July 2019) by two evaluators. Inclusion criteria were as follows; patients with gastrointestinal diseases, DNI measurements performed in the emergency department, indices of diagnostic performance of DNI for predicting severity, surgical outcomes, and mortality rate of gastrointestinal diseases. Risk of bias was assessed using the QUADAS-2 tool.

Results : Ten studies were identified and analyzed. Sensitivity, specificity, diagnostic odds ratio, and area under the curve of DNI were 0.75, 0.76, 10, and 0.82, respectively. Meta-regression showed no reason for the heterogeneity and there was no evidence for publication bias.

Conclusions : DNI can be considered as reliable non-invasive markers for predicting disease severity, surgical outcomes, and mortality rates in patients with gastrointestinal diseases in emergency medical departments.

Key words : Delta Neutrophil Index, Biomarker, Gastrointestinal Disorders

PD-091

Clinical outcomes of acute upper gastrointestinal bleeding according to the risk stratification by GBS-CT score in the emergency room

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Purpose : Upper gastrointestinal bleeding (UGI) is a common medical condition with mortality of 5 – 10%. We aimed to evaluate the efficacy of CT in patients with acute UGI bleeding in the emergency room (ER).

Methods : A total of 297 patients with UGI bleeding were included retrospectively in the ER of a university hospital during last year. Glasgow Blatchford Scores (GBS)-CT score was assessed by composite of high risk of GBS and high risk of CT. The high risk group was defined as having varix, liver cirrhosis, or active bleeding evidence on CT and patients with 7 or more of GBS. The moderate risk group was defined as satisfying either, and the low risk group was defined as none.

Results : Among 297 patients with UGI bleeding, 9 patients died. Rebleeding was developed in 17 cases. There was no statistically significant difference of baseline characteristics between CT(n=124) and non-CT group except for having higher chronic kidney disease in non-CT group. CT group took longer to initial endoscopy than non-CT group (368.22minute vs 566.87 minute, *P* value =0.009), but there were no differences in primary outcomes. In the GBS-CT score system, the high risk group had significantly higher in-hospital mortality (10.5% vs. 1.4% vs. 0% *P* value = 0.049) compared to the moderate and low risk groups.

Conclusions : The CT scan might be helpful to predict in-hospital mortality and prevented emergency endoscopy which is not essential in acute upper GI bleeding with high risk group in the emergency room.

Key words : Upper Gastrointestinal Bleeding, Emergency Room, Computed Tomography

Table 1. Demographical and clinical data of the patients that are included in the study

variable	Total N=297	NonCT group N=173	CT group N=124	P-value
Age,yr	64.15±15.84	65.24±16.23	62.64 ±15.21	0.162
Male	219(74%)	125(72%)	94(76%)	0.507
Comorbidities				
None	51(17.2%)	25(14.5%)	26(21.0%)	0.161
Hypertension	121(41%)	76(44%)	45(36.3%)	0.191
DM	89(30%)	56(32%)	33(27%)	0.306
CKD	15(5.1%)	14(8%)	1(1%)	0.005
UGI Cancer	5(1.7%)	2(1%)	3(2%)	0.653
Other cancer	21(7/1%)	8(4.6%)	13(10.5%)	0.066
Liver dz	74(25%)	38(22%)	36(29%)	0.176
Ischemic heart dz	33(11%)	22(13%)	11(9%)	0.352
Chronic heart dz	2(0.7%)	1(1%)	1(1%)	1.000
Atrial fibrillation	9(3%)	5(3%)	4(3%)	1.000
Stroke	24(8%)	17(10%)	7(6%)	0.280
Bleeding risk medications				
None	186(62.6%)	100(57.8%)	86(69.4%)	0.052
Antiplatelet and/or anticoagulation	91(30.6%)	62(35.8%)	29(23.4%)	0.022
Antiplatelet	84(28.3%)	59(34.1%)	25(20.2%)	0.009
Anticoagulation	10(3.4%)	5(2.9%)	5(4.0%)	0.747
Steroid	7(2.4%)	5(2.9%)	2(1.6%)	0.703
NSAIDs	27(9.2%)	17(9.8%)	10(8.2%)	0.686
Chief complaint				
Epigastric pain	25(8.4%)	14(8.1%)	11(8.9%)	0.0835
Hematemesis	127(42.8%)	67(38.7%)	60(48.4%)	0.122
Syncope	13(4.4%)	8(4.6%)	5(4.0%)	1.000
Melena	189(63.6%)	115(66.5%)	74(59.7%)	0.271
Dyspepsia,Nausea,Vomiting	26(8.8%)	17(9.8%)	9(7.3%)	0.534
Dizziness	26(8.8%)	17(9.8%)	9(7.3%)	0.534
Time interval for initial endoscopy (min)	451.16±643.73	368.22 ±335.53	566.87±903.67	0.009
Bleeding cause of Endoscopic finding				
Gastric ulcer	134(45%)	78(46.5%)	54(43.2%)	0.721
Duodenal ulcer	79(26%)	44(25.5%)	35(28.2%)	0.579
Variceal bleeding	49(17%)	27(16%)	22(18%)	0.637
Malignancy	6(2%)	2(1%)	4(3%)	0.240
Mallory-Weiss tear	39(13%)	23(13%)	16(13%)	1.000
Angiodysplasia	3(1%)	2(1%)	1(1%)	1.000
Dieulafoy	1(0.3%)	1(1%)	0(0%)	1.000
Mechanical injury (L tube)	3(1%)	3(1.7%)	0(0%)	0.268
Hemorrhagic gastritis	3(1%)	1(1%)	2(2%)	0.573
Treatment				
Surgery	3(1%)	0(0)	3(2%)	0.072
Embolization	6(2%)	0(0%)	6(5%)	0.005
Endoscopic treatment	201(68%)	116(67%)	85(69%)	0.803
Transfusion	193(65)	107(61.8%)	87(70.2%)	0.174
(unit)	2.99 ± 4.05	2.59 ± 2.85	3.54 ± 5.25	0.024
Outcome				
In-hospital mortality	9(3%)	4(2%)	5(4%)	0.498
In-hospital Rebleeding rate	19(6.4%)	11(6.4%)	8(6.5%)	1.000
Mean time of hospital stay, day	7.73±6.51	7.11±6.20	8.59±6.85	0.053
Mean score				
GBS		11.36±3.52	11.31±3.02	0.899

Table 2. Clinical outcomes of the CT group

GBSCT score				
	Low risk Score 0 (n=12)	Moderate risk Score 1 (n=74)	High risk Score 2 (n=38)	P value
Endoscopic treatment (n = 85, 68.5%)	2 (1.7%)	53 (71.6%)	10 (92.0%)	<0.001
Embolization (n = 6, 4.8%)	0 (0.0%)	3 (4.1%)	3 (7.9%)	0.379
Surgery (n = 3, 2.0%)	0 (0.0%)	3 (4.1%)	0 (0.0%)	0.501
Mean time of hospital stay (day)	5.4 ± 3.7	8.2 ± 10.3	10.3 ± 7.5	0.077
Transfusion (unit)	0	3.0 ± 4.1	5.5 ± 7.0	0.026
Rebleeding rate (n = 7, 6.0%)	0 (0.0%)	4 (5.4%)	4 (10.5%)	0.367
In-hospital mortality (n = 5, 2%)	0 (0.0%)	1 (1.4%)	4 (10.5%)	0.049
GBS score				
	Low risk Score 1 (n=0)	Moderate risk Score 2~6 (n=12)	High risk Score 7 (n=112)	P value
Endoscopic treatment (n = 85, 68.5%)	0	2(16.7%)	83(74.1%)	0.000
Embolization (n = 6, 4.8%)	0	0	3(2.7%)	1.000
Surgery (n = 3, 2.0%)	0	0	6(5.4%)	1.000
Mean time of hospital stay (day)	0	5.4±3.7	8.9±7.0	0.092
Transfusion (unit)	0	0	3.9±5.4	0.014
Rebleeding rate (n = 7, 6.0%)	0	0	8(7.2%)	1.000
In-hospital mortality (n = 5, 2%)	0	0	5(4.5%)	1.000

PD-092

Use of proton pump inhibitors and risk of fatty liver disease: A national wide cohort study

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Purpose : Proton pump inhibitor (PPI) induced hypochondria can change the composition of the gut microbiota inducing overgrowth of small bowel bacteria, which has been suggested to promote the development of fatty liver disease through the gut liver axis. We aimed to investigate the association between PPI use and the risk of fatty liver disease.

Methods : A cohort study was conducted using the Korean National Health Insurance Service-National Sample Cohort, a nationwide population-based representative sample. PPI use was identified from treatment claims and considered as a time-varying variable. Incident fatty liver disease was identified from outpatient visit claims.

Results : During 3,435,961 person-years of follow-up, 3,859 (0.8%) participants had PPI prescription for at least 28 days and 30,322 participants developed fatty liver disease. The HR for fatty liver disease comparing PPI users to non-PPI users was 1.67 (95% CI, 1.05-2.64, p-value = 0.029). However, when adjusted for multiple confounders, including BMI, smoking, alcohol intake, exercise status, first screening year, age, sex, residential area, income level, and comorbidity index, the association was no more significant (HR, 1.40; 95% CI, 0.88-2.22; p-value = 0.158). Considering multiple prescriptions of PPIs, the HR for fatty liver disease comparing PPI users to non-PPI users was 1.71 (95% CI, 1.19-2.47, p-value = 0.004). The final model after adjusting for multiple confounders showed borderline significance (HR, 1.40; 95% CI, 0.98-2.02; p-value = 0.068).

Conclusions : This nationwide cohort has shown that PPI use was associated with an increased risk of fatty liver disease compared to patients that do not use PPIs.

Key words : Proton Pump Inhibitor, Gut Microbiota, Fatty Liver Disease

PD-093

A 20-year single-center experience of tumor bleeding in duodenal gastrointestinal stromal tumors

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Purpose : Duodenal gastrointestinal stromal tumors (GIST) are rare and reports on the duodenal GIST bleeding are few. We analyzed the risk factors and clinical outcomes of hemorrhagic duodenal GIST, and compared them with gastric GIST.

Methods : Primary duodenal GIST surgically diagnosed between January 1998 and December 2017 were reviewed, retrospectively.

Results : Of a total of 170 patients, 48 (28.2%) patients exhibited tumor bleeding. Endoscopic intervention, embolization, and conservative treatment were administered for the initial hemostasis in 17, 1, and 30 patients, respectively. The 5-year survival rate was 81.9% in the bleeding group and 89.4% in the non-bleeding group (P = 0.495). Multivariate analysis showed that a significant risk factor for duodenal GIST bleeding was p53 positivity (hazard ratio [HR] 2.781, P = 0.012) and risk factors for overall survival were age ≥ 60 (HR 3.163, P = 0.027), a large maximal diameter, and the mitotic count ≥ 5/HPF (HR 3.265, P = 0.032). Bleeding incidence was significantly higher in duodenal GIST than gastric GIST (28.2% vs. 6.6 %, P < 0.001), and the re-bleeding rate after endoscopic hemostasis was also higher in the duodenal GIST than in the gastric GIST (41.2% vs. 13.3%).

Conclusions : In duodenal GIST patients with old age, a large tumor diameter, and a mitotic count ≥ 5/HPF, a treatment plan should be established in consideration of the poor prognosis, although tumor bleeding did not adversely affect the prognosis. Compared to gastric GIST, duodenal GIST showed a high incidence of tumor bleeding as well as the re-bleeding rate after endoscopic hemostasis.

Key words : Gastrointestinal Stromal Tumor, Endoscopy, Duodenum

PD-094

Upper gastrointestinal disease in non-alcoholic liver disease in Korea

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Purpose : Recently, non-alcoholic liver disease (NAFLD) and metabolic syndrome were considered the most common liver diseases.NASH patients have been reported to have a high incidence of colon polyps, but the characteristics of upper gastrointestinal disease have been rarely reported. The purpose of this study is to identify upper gastrointestinal abnormalities in NAFLD patients by comparing with healthy group.

Methods : This study is a retrospective study. The medical records were reviewed from October 2014 to September 2018. Among them, patients were selected who had all the investigation. Among the patients admitted to Seoul Good Hospital, 133 patients who underwent ultrasonography were selected, of which 65 patients underwent esophagogastroduodenoscopy (EGD). 34 were fatty liver, and 31 were selected as non-fatty patients. Reflux esophagitis, superficial gastritis, atrophic gastritis, intestinal metaplasia, and peptic ulcer were investigated.

Results : Albumin levels were significantly higher in the NAFLD group between the NAFLD and non-NAFLD groups (4.5 vs 4.2, P = 0.16). BMI was higher in the NAFLD group than in the normal group (25.7 vs 22.7, P <0.02). Significantly more reflux esophagitis was observed in the NAFLD group compared to the healthy control group (23/34 [67.6%] vs 12/31 [38.7%], P = 0.19). On the other hand, the intestinal metaplasia was significantly higher in the NAFLD group, though the case size was not large (8/34 [23.5%] vs 1/31 [3.2%], P = 0.028). Atrophic gastritis, superficial gastritis and peptic ulcer were not significantly different.

Conclusions : The NAFLD had a higher risk of reflux esophagitis and intestinal metaplasia than the non-fatty liver group.

Key words : Reflux Esophagitis, Intestinal Metaplasia, Non Alcoholic Fatty Liver Disease

PD-095

Prevalence and endoscopic treatment outcome of upper gastrointestinal neoplasms in familial adenomatous polyposis

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Introduction: Although the upper gastrointestinal (GI) neoplasms are not rare in patients with familial adenomatous polyposis (FAP), few studies have focused on the upper GI neoplasms, especially in Asians. Therefore, we aimed to investigate the prevalence and clinical outcomes of upper GI neoplasms in FAP patients.

Patients and Methods: Among the 215 patients diagnosed as FAP between January 1991 and December 2019, 208 patients who underwent esophagoagastroduodenoscopy (EGD) were regarded eligible. The clinical features and endoscopic treatment outcomes of upper GI neoplasms were retrospectively investigated and analyzed.

Results: Among the enrolled patients, 113 (54.3%) had one or more upper GI neoplasms as follows: gastric adenoma (n=34), gastric cancer (n=7), nonampullary duodenal adenoma (n=86), and ampullary adenoma (n=53). In patients with gastric neoplasms (n=37), 24 patients (64.9%) had treatment: endoscopic treatment in 22 patients and surgery in 2 patients. There was no tumor-related mortality during follow-up period of median 106 months (interquartile range [IQR], 63–174 months). The endoscopic treatment was performed on 47 (54.7%) patients of 86 nonampullary duodenal adenoma and 32 patients (60.4%) of 53 ampullary adenoma. There was no patient who underwent surgery for duodenal neoplasms and no tumor-related mortality during follow-up period of median 88 months (IQR, 42–145 months). The proportion of increasing of Spigelman stage between initial diagnosis and 2 years later was significantly higher in untreated group than in treated group for duodenal neoplasm (27.3% vs. 0.0%, P = 0.001).

Conclusion: On the basis of these results, endoscopic surveillance in FAP patients is important for detection and treatment of upper GI neoplasms at early stage. Especially, endoscopic therapy for duodenal neoplasms can reduce the severity of duodenal polyposis.

Key words: Familial Adenomatous Polyposis, Gastric Adenoma, Duodenal Adenoma, Gastric Cancer, Duodenal Cancer, Adenomatous Polyposis Coli

PD-096

Heterotopic pancreas: Added value of endoscopic ultrasound with computed tomography for diagnosis

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Purpose : To avoid unnecessary surgeries, noninvasive distinction of heterotopic pancreas (HP) from other subepithelial tumors (SETs) with high accuracy is crucial. We aimed to investigate the added value of endoscopic ultrasound (EUS) with computed tomography (CT) in distinguishing HP from other pathologies, when gastroduodenal SETs are suspected on upper endoscopic examination.

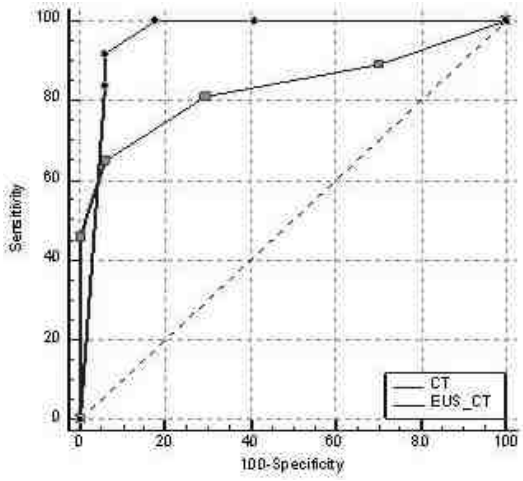
Methods : We retrospectively included 54 consecutive patients with gastroduodenal SETs who had undergone both abdominal CT and EUS within a 3-month interval. All EUS, endoscopy, and CT images were reviewed and evaluated in a blinded manner by an endoscopist and a radiologist, respectively. Univariate and multivariate analyses were performed to identify EUS/CT findings related to HP. Diagnostic performance of CT only and CT combined with EUS was compared for distinguishing HP from other SETs.

Results : We included patients with HP (n = 17; pathologically confirmed, n = 6), gastrointestinal stromal tumor (GIST, n = 24), and other pathologies (n = 13). Multivariate logistic regression analyses revealed that irregular margin, origin from submucosal layer, internal microcystic-tubular structure, and oval shape were in-

dependent factors in diagnosing HP by EUS, whereas a micro-lobulating contour was the only significantly independent factor in CT. In assessments of diagnostic performance, CT combined with EUS showed significantly superior diagnostic performance in comparison with CT only (area under the curve, 0.961 vs. 0.833, p = 0.028) in the consensus interpretation of an endoscopist and a radiologist.

Conclusions : CT combined with EUS with a comprehensive and complementary interpretation showed significant added value compared to CT only in diagnosing gastroduodenal HP.

Key words : Endosonography, Pancreas, Neoplasm



PD-097

Risk factors of rebleeding among patients with nonvariceal upper gastrointestinal bleeding with anticoagulation therapy

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Purpose : Acute upper gastrointestinal bleeding (UGIB) is a severe complication associated with oral anticoagulants. However, little is known about the risk factors of rebleeding among anticoagulant users with a history of UGIB. We aimed in this study to evaluate the risk factors of rebleeding after successful endoscopic hemostasis for UGI bleeding in patients taking oral anticoagulants.

Methods : Between July 2007 and July 2019, 68 patients with oral anticoagulants were hospitalized due to nonvariceal UGIB and followed up at a tertiary hospital. We retrospectively reviewed the clinical characteristics and compared them between patients with and without rebleeding.

Results : The most common cause of UGIB was peptic ulcer in 46 patients (70.6%). Rebleeding after hemostasis occurred in 16 patients (23.5%). There was no 30-day mortality among patients with rebleeding. Univariate analysis revealed that duodenal location (43.8 vs. 17.3%, p=0.029) and presence of major comorbidities (81.3 vs. 23.1%, p<0.001) were significantly more frequent in rebleeding group. By multivariate analysis, major comorbidities (odds ratio [OR] 95.2; 95% confidence interval [CI] ;p=0.004), duodenal location (OR 19.5; 95% CI ; p=0.022) and *Helicobacter pylori* infection (OR 24.1; 95% CI; p=0.018) were significant risk factors for rebleeding.

Conclusions : Despite of successful endoscopic hemostasis for UGIB, the rebleeding rate was considerable. Therefore, physicians need to be cautious about rebleeding if patients have a duodenal lesion, comorbidities or *Helicobacter pylori* infection.

Key words : Anticoagulant, Upper Gastrointestinal Bleeding, *Helicobacter pylori* Infection

PD-098

Is Ex vivo training before in vivo training effective for learning gastric endoscopic submucosal dissection?

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Purpose : The learning curve is essential in endoscopic submucosal dissection (ESD) training to improve proce-

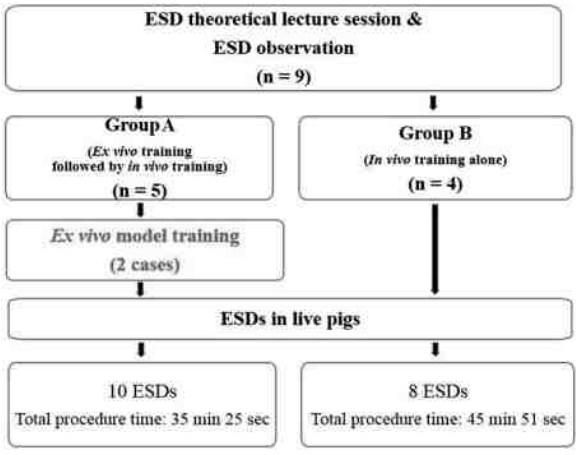
dure outcomes and reduce the rate of procedure-related complications. We aimed to compare the learning curve for in vivo porcine gastric ESD with or without the ex vivo porcine training model.

Methods : At the Olympus medical training and education center, nine endoscopists, inexperienced in ESD, were randomly divided into two groups (group A: ex vivo training followed by in vivo training, and group B: in vivo training only) and performed gastric ESDs. The course was supervised by an expert for a day.

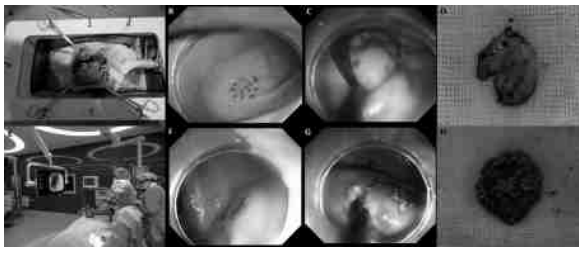
Results : A total of 18 ESDs were performed. *En bloc* resection rate was 88.9% (16/18), and complete resection rate was 94.4% (17/18). Median specimen size was 2.5 cm in group A and 2.1 cm in group B (P = 0.227). There was no significant difference in the procedure time between the two groups, except marking time (0′58″ vs. 2′58″, P = 0.027). Complication rates were also not significantly different between the two groups, with one perforation case in group A and one bleeding case in group B.

Conclusions : The efficacy of ex vivo training before in vivo training of gastric ESD in porcine model was questionable, since the ex vivo model consisting of harvested porcine stomachs demonstrated poor air inflation, less proper fixation, and excessive mucosal hardness for cutting. Therefore, an advanced training simulator is required for shortening the learning curve for the ESD procedure.

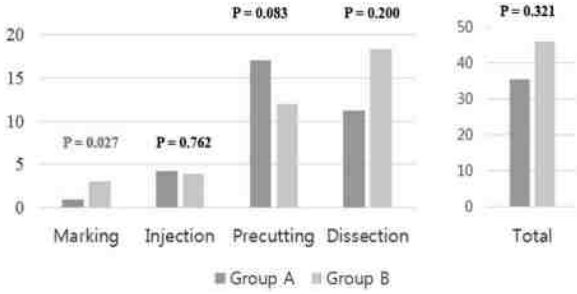
Key words : Endoscopic Submucosal Dissection, Training, Porcine Stomach



Study flowchart



ESD training in ex vivo (A–D) and in vivo model (E–H).



Comparison of procedure time of ESD between group A and group B

PD-099

The new international bleeding risk score system is a useful predictor of mortality in patients with non-variceal upper gastrointestinal bleeding

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Purpose : To validate the use of the new international bleeding score for prediction of mortality in patients with non-variceal upper gastrointestinal bleeding and to assess whether a high new score can predict re-bleeding or an extended hospital stay.

Methods : This was a 5-year, single-center, retrospective study performed in Korea. Non-variceal upper gastrointestinal bleeding was assessed using the new international bleeding risk score, Rockall, AIMS65, GBS, and PNED scores. Scores for mortality were assessed by calculating the area under the receiver-operating characteristic curves (AUROC). Data regarding patients' characteristics, endoscopic evidence of bleeding, re-bleeding, duration of hospital stay, and mortality at day 30 were collected. The predictive value of factors for mortality at day 30 was identified using multivariate logistic re-

gression analysis of variables identified by univariate logistic regression.

Results : Of 1000 hospital patients who presented with upper gastrointestinal bleeding, 905 patients with non-variceal bleeding were analyzed and 95 patients with variceal bleeding were excluded.. The new score is a weighted risk score based on the patients' ages, comorbidities and results of blood tests. The new score showed a higher discriminative ability compared to the other scores by AUROC (0.958, P<0.001),when predicting mortality. A comparison of the high risk new score and the low risk groups revealed significant differences in the duration of hospitalization (P<0.001) and re-bleeding (P<0.001).

Conclusions : The new international bleeding score appears tobe a better predictor of the 30-day mortality rate than the scores previously mentioned. Screening for high risk groups using the new score can predict mortality, long-term hospital admission and re-bleeding. Use of this scoring system can improve outcomes through appropriate management and intervention.

Key words : Peptic Ulcer Bleeding, Mortality, Re-bleeding

PD-100

Development and validation of artificial intelligence program using the standard 8 region imaging method for the quality control of esophagogastroduodenoscopy

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Purpose : Esophagogastroduodenoscopy (EGD) plays an important role in diagnosis and treatment of upper gastrointestinal disease. Complete visualization and photodocumentation of upper gastrointestinal (UGI) tracts, from the upper esophageal sphincter to the second portion of the duodenum, is an important measure to prove the performance of each EGD. Based on recent success of AI (artificial intelligence) application in endoscopic images, we developed an AI-drived quality control system for EGD through convolutional neural network (CNN) using documented endoscopic images.

Methods : We labeled the stomach location to eight alphabets according to the ESGE photodocumentation methods. The total number of EGD pictures was 2592 from 250 cases, 200 complete cases and 50 incomplete cases. We removed unnecessary black pads from the original images, and we resized our data into 224 by 224 for modeling. After image preprocessing, we performed two studies using 26 different networks with 5-fold cross-validation: multi-class classification study of images into 8 locations, and binary classification study to determine whether the EGD procedure was performed without missing any location.

Results : For the multi-class classificiation, the model we used classified the location with 98% accuracy, 98% positive predictive value, and 97% sensitivity. For the binary classification, our model showed 89% of accuracy. We also used class activation mapping to be more transparent of our study results and to explain how the model works.

Conclusions : We were able to classify the images to the correct anatomical locations and evaluate the completeness of EGD study in terms of visualization.

Key words : Endoscopy, Artificial Intelligence, Deep Learning

PD-101

Durability test of endoscopic successive suturing device: In vitro experiment

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Purpose : With the recent attention of NOTES, the need for endoscopic suture device has emerged. Although many devices are being developed, only medical clip system is mainly used to date. Previously our center developed successive suture device (SSD) using stitch bead. However, SSD using bead system has the disadvantage of

being complicated and taking a long time. A new beadless SSD has been developed that can be used by attaching and detaching a device with a needle embedded in an endoscope tip. The purpose of this study was to verify the feasibility of the newly developed SSD.

Methods : Four specimens were prepared using the body of the extracted porcine stomach. Specimens were divided into two group and one partial thickness and full thickness suture stitch were performed on specimens by SSD using stitch bead and new beadles SSD each. The suture time was measured. Specimens were fixed on a circular bite and tested on an axial-torsion test machine. The tensile force at the tissue tear after applying static loading was measured, and the suture forces of the two groups were compared.

Results : Suture time was approximately 60 percent shorter with new beadless SSD than conventional beaded SSD. Tensile forces differed by less than 10 percent. It was found that they sustained higher tensile forces at full thickness suture than partial thickness.

Conclusions : We developed A new beadless SSD. Compared with the previous SSD using stitch bead, it showed tolerable closure strength and short procedure time. Additional in vivo experimentation is needed.

Key words : Endoscopic, Suture, Device

PD-102

The safety and efficacy analysis of the critical pathway application in endoscopic resection for gastric polyps and colon polyps

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Purpose : Critical pathway (CP) is optimized medical management process. To standardize endoscopic resection (ER), the effectiveness and the safety of CP application for ER were analyzed.

Methods : CP programs for ER in neoplastic lesions of stomach and colon were developed under multidisciplinary team approach in March to May 2018. Developed CP programs were planning to stay in the hospital for 3 days according to a predetermined treatment plans (including pharmaceuticals). If the patient does not apply to the CP program, additional treatment options after the procedure and date of discharge were decided in accordance with the individual judgment of the attending physician.

Results : CP programs for ER applied to the eligible subjects since July 2018 through May 2019. Finally, we enrolled 27 (29.3%) subjects as CP program group and 65 (70.7%) as control group. Fourteen (31.8%) out of 44 subjects engaged in CP for neoplastic lesion in stomach and 13 (27.1%) out of 48 subjects had a CP for neoplastic lesions in colon. There was no serious complication both groups. Total medical fee were significantly decreased in CP program group (2,485 thousand Korean Won versus 1,867 thousand Korean Won $P<0.003$). Satisfaction scores were statistically improved after CP application (2.9 points *vs.* 3.8 points out of five as perfect scores; $P=0.001$) for the medical personnel, but score of patients satisfaction was not different (4.3 *vs.* 4.5 points out of five as perfect scores; $P=0.066$)

Conclusions : Application of CP program for ER is considered safe. Moreover it can reduce the total medical expenses.

Key words : Polyp of Stomach, Endoscopic Resection, Critical Pathway

PD-103

Corrosive esophagitis and gastritis induced by glutaraldehyde ingestion

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Contents : Corrosive esophagitis and gastritis is characterized by caustic damage due to ingestion of chemical agents. Caustic agent causes tissue destruction through liquefaction or coagulation reactions. Here, we report a case of corrosive esophagitis and gastritis caused by accidental ingestion of glutaraldehyde in Korea. A 62-year-old

man presented to the emergency room, 8 hours after ingesting glutaraldehyde, which is widely used for prevention of foot-and-mouth disease in pigs. Urgent endoscopic examination revealed severely damaged mucosa of esophagus and stomach. With conservative treatment, the patient's condition was improved and he was discharged on the 35th day of admission.

Key words : Corrosive Esophagitis, Corrosive Gastritis, Glutaraldehyde

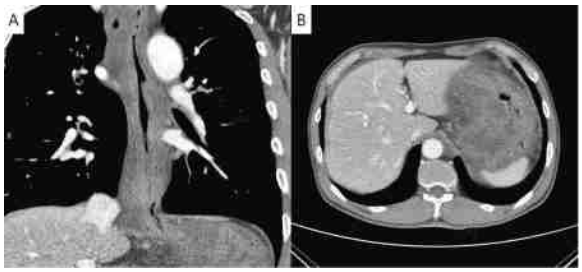

Figure 1. Contrast-enhanced chest computed tomography showing extensive wall thickening of the esophagus and stomach

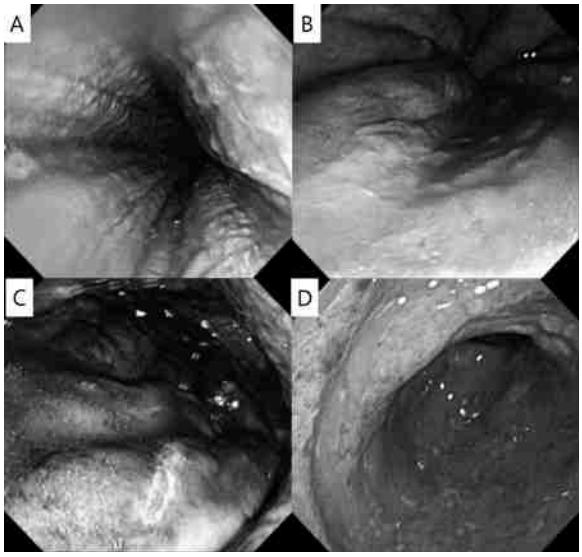

Figure 2. EGD performed 15 hours after admission showing corrosive change of the esophagus and stomach

PD-104

Oncologic safety of delayed surgery after non-curative endoscopic resection in patients with early gastric cancer: A matched cohort study

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Purpose : When non-curative resection is confirmed after endoscopic resection of early gastric cancer, delayed curative gastrectomy is recommended because of the risk of lymph node metastasis. We aimed to compare long-term survival and lymph node metastasis after delayed (secondary) and primary surgery.

Methods : Patients who underwent R0 curative gastrectomy for early gastric cancer were included and divided into primary surgery and secondary surgery for non-curative resection after endoscopic resection groups. Propensity score matching of the two groups (3:1) was performed. The primary outcome was 5-year overall survival and the secondary outcomes were 5-year cancer specific survival, 5-year disease free survival, and lymph node metastasis rate.

Results : A total of 6,512 patients were included, 6,111 (93.8%) in the primary surgery group and 401 (6.2%) in the secondary surgery group. After propensity score matching, 1,439 patients were included in the analysis, 1042 (72.41%) in the primary surgery group and 397 (27.59%) in the secondary surgery group. The 5-year overall (HR, 0.608; 95% CI, 0.314-1.176; p = 0.139) and disease-free survival rates (HR, 0.256; 95% CI, 0.06 to 1.095; p = 0.066) were equivalent in the two groups. The lymph node metastasis rate (HR, 0.423; 95% CI, 0.244 to 0.731; p = 0.002) was higher and the 5-year cancer specific survival (HR, 0.039; 95% CI, 0.018-0.902; P = 0.039) was more unfavorable in the primary surgery group.

Conclusions : The long-term outcomes of secondary surgery after non-curative endoscopic resection for early gastric cancer were non-inferior to primary surgery in terms of 5-year survival and lymph node metastasis risk.

Kew words : Non-curative Resection, Primary Surgery, Secondary Surgery

PD-105

Chronic anemia secondary to duodenal Dieulafoy's lesion: A Case report

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Contents : Dieulafoy's lesion is a rare but critical cause of recurrent gastrointestinal bleeding responsible for about 1-2% of acute upper gastrointestinal bleeds. Extra-gastric location of Dieulafoy's lesion is uncommon and is challenging to identify, as it is only often detected when bleeding actively. If not promptly addressed, the mortality rate can reach up to 9-13%. Hence, appropriate therapeutic endoscopic techniques should immediately be performed upon detection. We report a case of a 58-year old female with a 1-year history of occult gastrointestinal bleeding initially presenting as chronic anemia with multiple admissions for blood transfusion. Preliminary investigations including two esophagogastroduodenoscopic procedures failed to locate any source of bleed. During this admission, she presented with melena, and repeat esophagogastroduodenoscopy showed an actively bleeding Dieulafoy's lesion at the junction of the 2nd and 3rd portion of the duodenum. Hemostasis was achieved successfully by using an endoscopic hemoclip. Due to its small size and obscure location, endoscopic diagnosis of duodenal Dieulafoy's lesion can be difficult. High clinical suspicion is important among patients with recurrent or occult gastrointestinal bleeding on a background of previously unremarkable endoscopic findings. Early endoscopic evaluation during or following a bleeding episode may be key to accurate diagnosis. Clipping is one of the important endoscopic modalities to achieve hemostasis.

Key words : Dieulafoy's Lesion, Acute Gastrointestinal Bleeding, Duodenal Dieulafoy

Figure 1. Endoscopic hemoclipping of duodenal Dieulafoy

A. Oozing blood at the junction of second and third portion of duodenum.
B. Endoscopic hemoclip placement of the bleeding vessel.
C. Successful hemostasis with clipping.

PD-106

Postoperative outcome of patient who underwent surgical treatment for Wilkie's syndrome; 20 years experience

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Purpose : Wilkie's syndrome is a rare disease which occurs due to obstruction at third part of the duodenum due to compression by the superior mesenteric artery. There is no clear consensus about management and follow up of this disease. This study analyses presentation demographic data, surgical treatment and their outcome following the surgery.

Methods : Ten patients who underwent surgical treatment for Wilkie's syndrome during 2000-january to 2019-november were analyzed. All surgeries were done by a single consultant surgeon using open technique.

Results : During the study period 10 patients were diagnosed with Wilkie's syndrome (n=10). Out of ten patients, 70% (n=7) were males and 30% (n=3) were females. Mean age was 52 y (range 30-84). All ten patients were presented with vomiting after meals (100%). Out of that two were acute presentations to the emergency department. Nine were diagnosed with barium swallow one with CECT abdomen. Nine out of ten underwent duodenojejunostomy (90%). Only one underwent gastrojejunostomy. Mean hospital stay was 7 days. Maximum follow up was about 7 y and minimum was 1 months. From the patients who underwent duodenojejunostomy, vomiting was settled in all 9 patients after one month follow up (100%) six patients had loss of appetite (LOA) (66.66% n=6). At six months LOA was present only in 3 patients. The patient who underwent gastrojejunostomy had vomiting for 6 months and persistent loss of appetite and hypoproteinemia after 7 years.

Conclusions : Duodenojejunostomy is a successful surgical procedure for Wilkie's syndrome. Although the vomiting settles with the surgery, LOA takes longer time to settle.

Key words : Wilkie's Syndrome, Duodenojejunostomy, Gastrojejunostomy

PD-107

Comfort, safety and quality of upper gastrointestinal endoscopy after conventional split-dose polyethylene glycol electrolyte solution

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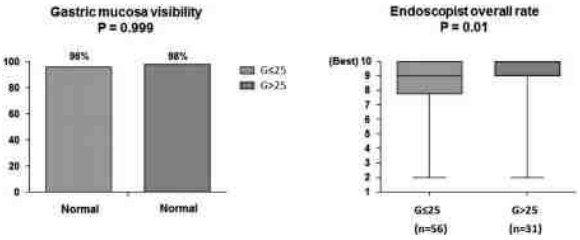
Purpose : The aspiration of gastric contents into the lungs creates a serious problem after endoscopy. There are limit evidence of standard fasting guideline for avoiding gastric content aspiration for esophagogastroduodenoscopy (EGD) follow with colonoscopy in same day procedure. We aim to compare the safety, quality and tolerance of conventional split-dose polyethylene glycol electrolyte solution for outpatient colonoscopy under moderate sedation.

Methods : The study was a prospective study in patients who performed outpatient EGD and colonoscopy. Patients undergoing colonoscopy the day following EGD for evaluation of upper and lower gastrointestinal symptoms and others under moderate sedation. Patients were consecutively received split-dose polyethylene glycol or PEG (1 L PEG orally the evening prior and 1 L PEG orally the following day at 5 am). The main outcome measurements are safety, amount of gastric content, quality and tolerance of EGD after bowel preparation.

Results : Eighty-sever patients enrolled to split-dose PEG protocol (table 1). Overall mean BMI ± SD was 24 ± 3.98. Sixty-fore percent of patients measured gastric content <25 ml. There were no significant prep-related adverse events in either group. Overall mean ± SD gastric mucosa visibility quality for EGD after PEG was 97 ± 2.8 (figure 1).

Conclusions : In outpatient patients for same day EGD with colonoscopy, use of EGD after conventional split-dose PEG demonstrated safety, patient tolerance and quality of gastric preparation for EGD.

Key words : Gastric Content, Quality Improvement, Endoscopy



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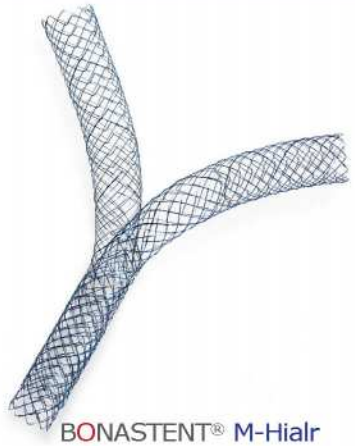

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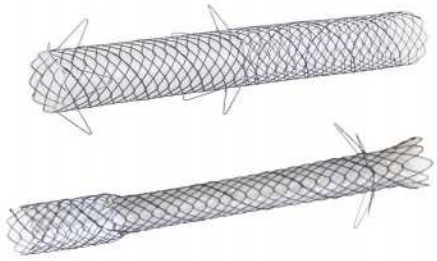

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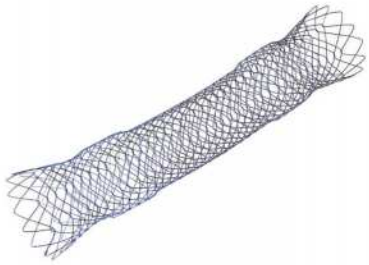

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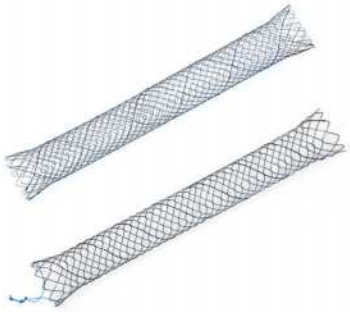

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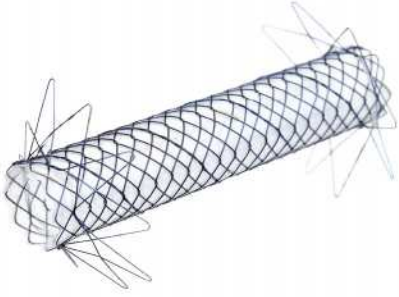

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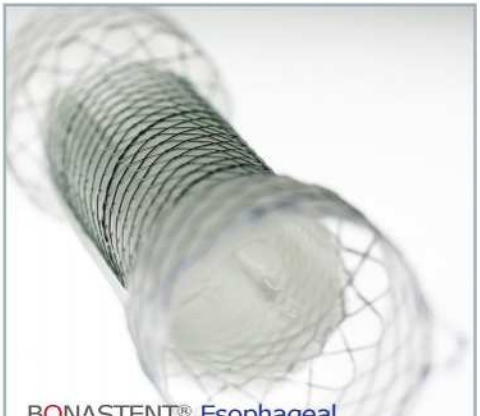

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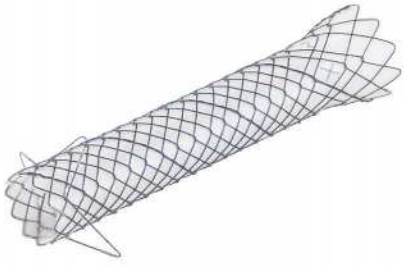

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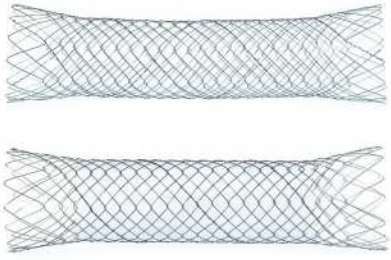

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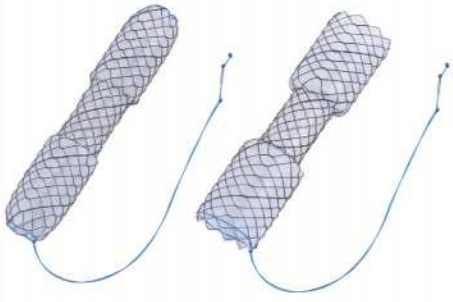

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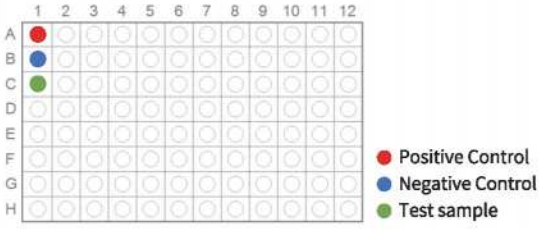

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Test per run	Up to 94 sample in a single run
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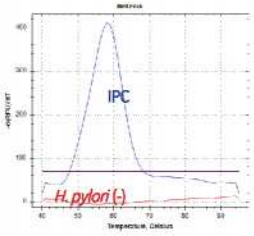

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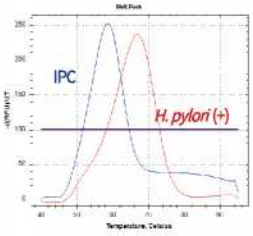
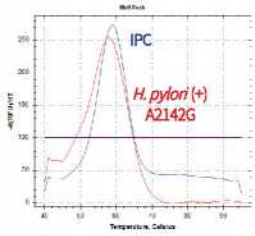
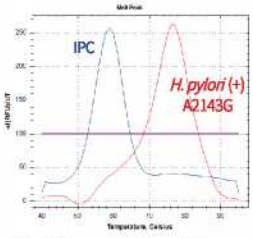


H. pylori positive



Clarithromycin resistance (A2142G)



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PPI, proton pump inhibitor
References 1. 파리에트®정 10 mg, 20 mg 제품설명서(개정년월일 : 2019-01-08). 2. 파리에트®정 5 mg 제품설명서(개정년월일 : 2019-02-27). 3. Warrington S, et al. *Ailment Pharmacol Ther.* 2002;16(7):1301-7. 4. Shimatani T, et al. *Ailment Pharmacol Ther.* 2004;19(1):19-22.

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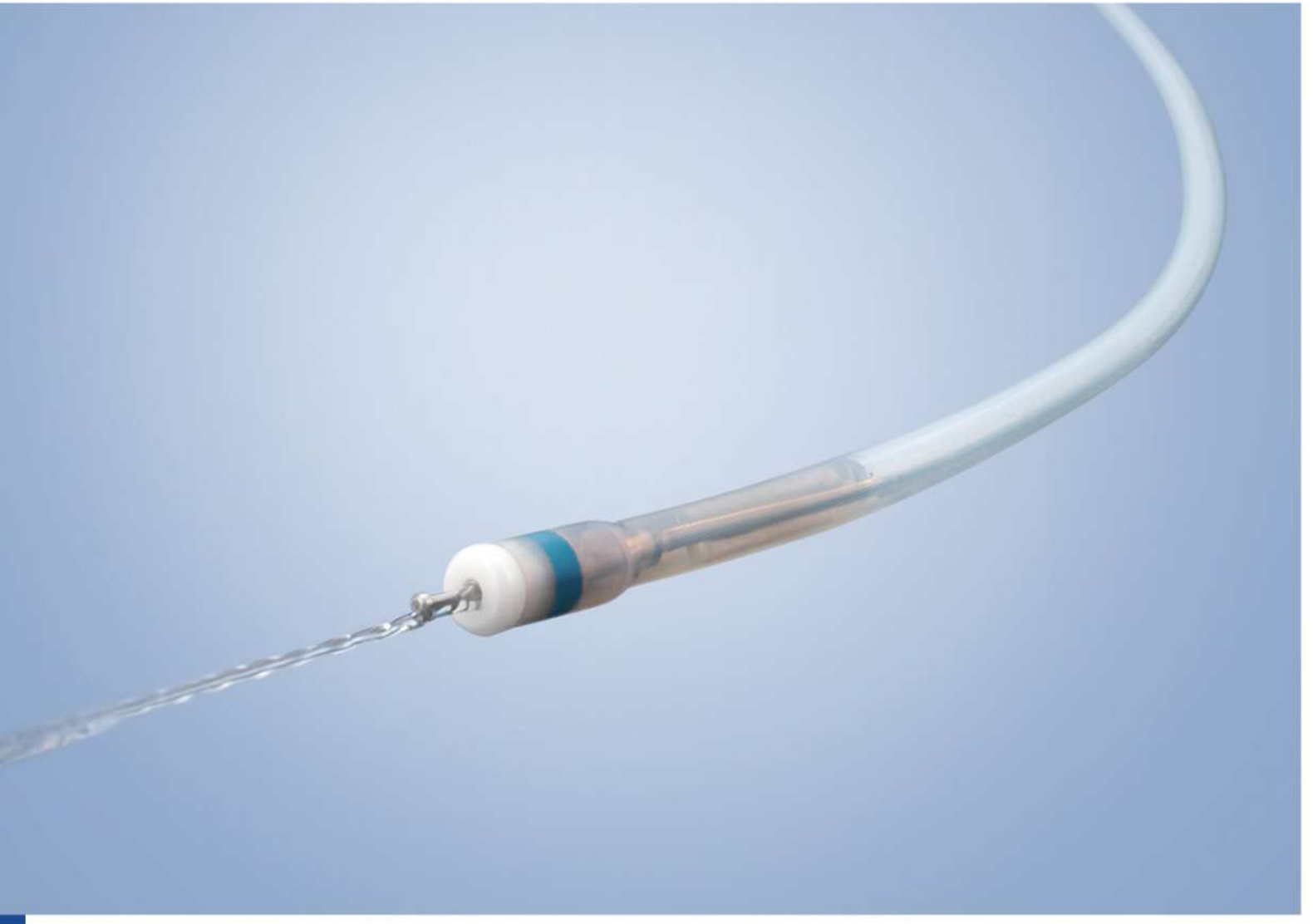

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