
(25)

消化內視鏡於食道逆流及小腸疾病精準照護之新進展

Precision Care for GERD and Small Bowel Disease: Update in GI Endoscopy

時間：113 年 6 月 22 日(星期六) 13:20~17:10

地點：臺北榮民總醫院 長青樓護理館會議室

13:20-13:30 Opening Remarks

盧俊良教授
Ching-Liang Lu

座長：盧俊良 教授 (Ching-Liang Lu)
陳健麟 教授 (Chien-Lin Chen)

13:30-14:05 臺灣現今胃食道逆流疾病之認識
Current Understanding of GERD in Taiwan

曾屏輝教授
Ping-Huei Tseng

14:05-14:30 人工智慧運用於高解析度食道動力學檢查
Artificial Intelligence in Diagnosis of GERD

翁銘廷醫師
Ming-Wun Wong

14:30-15:10 個人化胃食道逆流疾病之處置
Personalized Management of GERD

沢田明也醫師
Dr. Akinari Sawada
(日本)

15:10-15:30 Coffee Break

座長：李癸洲 教授 (Kuei-Chuan Lee)
蘇銘堯 副院長 (Ming-Yao Su)

15:30-16:10 凝膠浸入式內視鏡：一個用來保護視野的有效創新
Gel immersion Endoscopy: An Effective Innovation for
Securing the Visual Field

矢野智則教授
Prof. Tomonori Yano
(日本)

16:10-16:35 膠囊內視鏡新進展
Novel Advances in Capsule Endoscopy

王彥博醫師
Yen-Po Wang

16:35-17:00 介入性小腸鏡新進展
Novel Advances in Interventional Enteroscopy

許文鴻主任
Wen-Hung Hsu

17:00-17:10 Closing Remarks

侯明志副院長
Ming-Chih Hou

Current understanding of GERD in Taiwan

臺灣現今胃食道逆流疾病之認識

Ping-Huei Tseng

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The prevalence of gastroesophageal reflux disease (GERD) has been increasing rapidly in Taiwan in recent decade, mostly related to the westernization of life style and diet. GERD is associated with a broad spectrum of symptoms, and have a great impact on the quality of life of patients. Currently, proton pump inhibitor (PPI) remains the most potent anti-secretory agent for acid suppression, symptomatic relief and mucosa healing, and is the drug of choice in the treatment of GERD. However, up to 40% of patients have poor responses to PPI. The underlying pathophysiology involved in refractory GERD is complex. Identifying factors that might attribute to the poor treatment response of PPI in GERD is very important to improve the overall treatment responses. Currently, endoscopy is the mainstay of diagnostic tool for patients with reflux symptoms in Taiwan, but a great proportion of patients have no esophageal mucosa changes on examination, so call non-erosive reflux disease (NERD). The 24-h MII-pH catheter combines impedance channels to conventional pH catheters and helps to establish the reflux-symptom association with symptoms index (SI) and symptom association probability (SAP), and therefore is very useful in clarifying the underlying mechanism of refractory GERD. With the aid of 24-h MII-pH monitoring, traditional GERD patients, who are quite heterogeneous from a pathophysiological point of view, could be further categorized into 1. endoscopic positive; 2. true NERD (patients with an excess of acid reflux); 3.hypersensitive esophagus to acid reflux; 4.hypersensitive esophagus to non-acid reflux) and 5.functional heartburn. For patients who could not tolerate catheter-based ambulatory MII-pH monitoring, utilization of prolonged wireless reflux monitoring off PPI therapy also helps to characterize severity of GERD. Absence of pathologic acid exposure on ambulatory reflux monitoring (AET <4.0% on all 4 days of the prolonged wireless pH study) with a normal endoscopy rules out GERD. Erosive esophagitis of Los Angeles Grade B or higher, and/or AET \geq 6.0% on 2 or more days constitutes conclusive GERD evidence. Therapeutic strategies should be directed based on the GERD phenotype and start with the least invasive and safest treatment options. Moreover, personal factors focused on visceral anxiety and hypervigilance need to be addressed because these features can affect symptom severity and health care use. These motility studies, including HRM, MII-pH, and wireless pH monitoring, are increasing adopted for clinical management of GERD in Taiwan, and could help to clarify the mechanism of refractory reflux symptoms and tailor treatment strategies (personalized/precision medicine).

Artificial intelligence in diagnosis of GERD

人工智慧運用於高解析度食道動力學檢查

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The global and Asian prevalence of gastroesophageal reflux disease (GERD) is high and continues to increase. Esophagogastroduodenoscopy (EGD) is commonly utilized as the initial diagnostic test for individuals presenting alarm symptoms or those unresponsive to antisecretory therapy. However, the sensitivity of EGD in identifying reflux disease is not foolproof. When endoscopy fails to identify the cause of a patient's symptoms, ambulatory reflux monitoring is undertaken to confirm or dismiss a pathological esophageal reflux burden. Advances in metrics derived from pH-impedance monitoring are showing promise in enhancing GERD diagnosis.

Laryngopharyngeal reflux (LPR) symptoms, including voice hoarseness, sore throat, throat clearing, cough, and globus sensation, are attributed to the retrograde flow of gastric contents to the larynx, potentially causing laryngeal symptoms. However, determining whether laryngeal symptoms are directly caused by GERD remains a clinical challenge. Supragastric belching, characterized by the intake of air from the mouth/pharynx into the esophagus followed by immediate expulsion of esophageal air using abdominal straining, is often found in conjunction with GERD.

The incorporation of artificial intelligence (AI) in enhancing diagnostic accuracy for various diseases, including GERD, is gaining momentum. In this presentation, we will share our insights and provide an update on the current literature regarding the applications of AI in GERD diagnosis. This includes measuring novel pH-impedance metrics, evaluating LPR, and assessing supragastric belching. In conclusion, AI has shown high efficacy in measuring impedance metrics and is anticipated to play a significant role in optimizing the precise diagnosis and personalized management of GERD patients in the near future.

Personalized management of GERD

個人化胃食道逆流疾病之處置

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GERD is defined as a condition where the reflux of gastric contents causes troublesome symptoms and/or complications such as bleeding, stricture formation, and esophageal adenocarcinoma. GERD is one of the most common diseases in clinical practice as the prevalence of GERD is approximately 14% across the world. The pathophysiology of GERD is multifaceted, and reflux symptoms can be caused by several non-GERD conditions (i.e. disorders of gut-brain interactions including functional esophageal disorders and behavioral disorders). For the appropriate personalized management of GERD, it is essential to understand what accounts for the main pathophysiology of reflux symptoms in each patient using objective testing. On the basis of symptom profile, endoscopic findings and distinct patterns during ambulatory reflux monitoring, patients with reflux symptoms can be classified into four different phenotypes, erosive reflux disease (ERD), non-erosive reflux disease (NERD), reflux hypersensitivity (RH) and functional heartburn (FH). ERD and NERD are regarded as true GERD whereas RH and FH having normal esophageal acid exposure are classified as functional esophageal disorders. Surprisingly, RH and FH consist of up to 60% of endoscopy-negative reflux patients who are likely to benefit from pain modulators rather than acid suppressants. In addition, it has been increasingly recognized that an insignificant number of patients with behavioral disorders (i.e. excessive supragastric belching and rumination) could be misdiagnosed as GERD since they often manifest themselves as typical reflux symptoms such as heartburn and regurgitation. For these conditions, cognitive behavioral therapy should be considered instead of ineffective acid suppressants. As for true GERD, a new strong acid suppressant, P-CAB, has become available in several countries. However, there is still a paucity of evidence about the selection of treatment among PPI, P-CAB and anti-reflux surgery for true GERD.

Gel immersion endoscopy: An effective innovation for securing the visual field

凝膠浸入式內視鏡：一個用來保護視野的有效創新

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During endoscopy, especially in patients with gastrointestinal bleeding, it is often difficult to secure the visual field. Although water immersion techniques are sometimes used to mitigate this situation, maintenance of the visual field is often difficult because the injected water rapidly mixes with any luminal blood and/or residue. Poor preparation before colonoscopy also makes it difficult to secure the visual field when using water immersion or water exchange techniques. The use of gas insufflation to displace luminal contents can cause significant discomfort and difficult endoscope insertion.

We reported the technique called “gel immersion endoscopy”. Clear gel with an appropriate viscosity (which prevents rapid luminal mixing) is injected through the accessory channel, instead of water. The viscous gel displaces luminal blood, clots, and residue. In the space occupied by the gel, we can easily secure the visual field and perform endotherapy calmly and effectively, even in patients with massive arterial bleeding and/or poor preparation. Since the visual field can be secured even while the lumen is collapsed, the redundant scope loop is reduced, and maneuverability is improved. A low intraluminal pressure is maintained; this may reduce the patient’s discomfort and risk of complications.

We initially used a jelly-like drink “OS-1 jelly” (Otsuka Pharmaceutical Factory, Japan) for this technique. This is a dedicated rehydration-supplement for patients with dehydration composed of a gelling agent (polysaccharide-thickener), electrolytes, carbohydrates, and water. In this gel, mono-polar devices are less effective due to electrical current dissipation due to its high electrolyte content.

We developed the electrolyte-free gel dedicated to this method (Viscoclear, Otsuka pharmaceutical factory), launched in October 2020. It allows the effective use of mono-polar devices within the gel, and has been used in gel immersion EMR, gel immersion ESD. In addition, it has been used in various endoscopic procedures such as EUS, reduction of volvulus, and foreign body retrieval.

Novel advances in capsule endoscopy

膠囊內視鏡新進展

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Capsule endoscope was approved to be used for evaluation of small bowel disease since 2001. After 20 years, it had been regarded as the first option of examination for evaluation of suspected small bowel bleeding. Other than suspected small bowel bleeding evaluation, capsule endoscopy can also be used in Crohn's disease diagnosis and monitoring, celiac disease diagnosis, polyposis syndrome follow-up and evaluation of patients with suspected small bowel tumors. Capsule endoscopy was easy to be performed, less invasive, and less disruptive. Early capsule endoscopy can also help improve diagnostic yield in patients with suspected small bowel bleeding. In capsule endoscopy reading, the new generation of capsule endoscopy has longer battery life with real-time image detection that are useful in improving capsule endoscope completion rate. Double lens capsule endoscope and panoramic capsule endoscope were also developed to improve the diagnostic ability of capsule endoscopy. Panoramic capsule endoscope was found to increase the visibility of ampulla vater. Capsule retention happens in about 1% of examination. Risk factors evaluation, MR enterography/ CT enterography or patency capsule can help avoid capsule retention. Application of Artificial intelligence in assisting capsule endoscopy is developing in recent years. Artificial intelligence can help detect and classify different small bowel lesions, and also evaluation of visibility. In a recent prospectively conducted study, artificial intelligence-assisted reading was superior to standard reading in detecting P2 lesion and faster than standard reading. Artificial intelligence is promising to assist capsule endoscopy reading in the near future.

Novel advances in interventional enteroscopy

介入性小腸鏡新進展

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Up to the end of the 20th century, the endoscopic options for diagnostic and therapeutic interventions throughout the entire small bowel were limited. In 2001, the introduction of double balloon enteroscopy by Pro Yamamoto opened the last “black box” of the gastrointestinal tract enabling complete visualization of the small bowel with non-surgical method. Currently, double-balloon enteroscopy, single-balloon enteroscopy, balloon guided enteroscopy and spiral enteroscopy are available in clinical practice. Recently, numerous new developments in the field of deep enteroscopy have emerged expanding the diagnostic and therapeutic application to against small bowel diseases with intervention such as tissue sampling with biopsies, mucosal injection, polypectomy, hemostatic techniques, stricture dilation, and retrieval of foreign bodies. Device assisted enteroscopy have become an important tool in the small bowel disease management.