消化系 Gastroenterology

October 19, 2025(Sun)
Room 101

主　　題：消化疾病處理之實用超音波相
Practical Echogram in GI Management.

內容簡述：In recent years, many new procedures and concepts have been introduced to gastrointestinal management. What is the role of ultrasound in this context? The program will provide updated information.

Moderator: 王秀伯 Hsiu-Po Wang 臺大醫院
陳建華 Jiann-Hwa Chen 台北慈濟醫院

時間 Time	題目 Topic	演講者 Speaker
08:30-08:35	Opening Remarks	王秀伯 Hsiu-Po Wang 臺大醫院
08:35-08:55 GI-S01	US Evaluation for Clinical Management of Acute Pancreatitis	黃永輝 Weng-Fai Wong 臺大醫院
08:55-09:15 GI-S02	Key Points of US Evaluation for Pancreatic Neoplasm	蘇偉志 Wei-Chih Su 台北慈濟醫院
09:15-09:35 GI-S03	Decision Making of Biliary Disease According to US Findings	施翔耀 Hsiang-Yao Shih 高雄醫學大學附設醫院
09:35-09:55 GI-S04	US Pictures of Treatment Devices in Digestive Diseases	王秀伯 Hsiu-Po Wang 臺大醫院
09:55-10:15 GI-S05	US Evaluation and EUS Management of Chronic Pancreatitis	郭雨庭 Yu-Ting Kuo 臺大醫院
10:15-10:35	Coffee Break	
Moderator:	陳建華 Chien-Hua Chen 秀傳醫院 孫盟舜 Meng-Shun Sun 阮綜合醫院	
10:35-10:55 GI-S06	GI US for Clinical Decision Making	王秀伯 Hsiu-Po Wang 臺大醫院
10:55-11:15 GI-S07	Color Doppler Ultrasound for Vascular-related Digestive Diseases	梁仁宙 Ren-Jow Liang 恩主公醫院
11:15-11:35 GI-S08	Current Situation of AI in US for Digestive Diseases	陳冠至 Kuan-Chih Chen 亞東醫院
11:35-11:55 GI-S09	Role of US-guided Intervention: Comparison of Liver Tumor Biopsy between a Medical Center and a District Hospital: A 10-year Retrospective Study	陳洋源 Yang-Yuan Chen 彰化基督教醫院
11:55-12:00	Closing Remarks	陳建華 Chien-Hua Chen 秀傳醫院

GI-S01

US Evaluation for Clinical Management of Acute Pancreatitis

Weng-Fai Wong
Department of Integrated Diagnostics & Therapeutics, National Taiwan University Hospital, Taipei, Taiwan

Acute pancreatitis is a leading cause of hospitalization in gastroenterology. In Taiwan, gallstones and alcohol are the predominant etiologies. Given its low cost, wide availability, and lack of radiation exposure, trans-abdominal ultrasound is a useful tool to identify biliary causes and early complications of pancreatitis. The severity of acute pancreatitis ranges widely; 15–20% of patients develop necrotizing pancreatitis with organ failure and substantial mortality. Contrast-enhanced ultrasound (CEUS) allows early differentiation between interstitial and necrotizing pancreatitis and detects local complications, enabling timely escalation of monitoring and intervention. This talk will cover: (1) strengths and limitations of ultrasound for etiologic work-up and initial risk stratification; (2) CEUS for early necrosis detection and complication mapping under the revised Atlanta classification; (3) a practical algorithm integrating US with EUS/MRCP/CT and ERCP timing; and (4) endoscopic ultrasound-guided interventions in severe diseases.

GI-S02

Key Points of US Evaluation for Pancreatic Neoplasms

Wei-Chih Su
Taipei Tzu-Chi Hospital

Transabdominal ultrasound serves as a critical first-line modality for the clinical assessment, initial detection, and characterization of various pancreatic neoplasms, including pancreatic adenocarcinoma, neuroendocrine tumors, and cystic neoplasms.

Specific sonographic features are highlighted to aid differential diagnosis. Ductal adeno-carcinoma typically presents as hypoechoic, ill-defined lesions, often accompanied by altered gland contours or ductal dilation. In contrast, neuroendocrine tumors may appear as well-defined, solid hypoechoic/isoechoic masses. For cystic neoplasms, serous adenomas are characterized by multiple small anechoic contents, while mucinous cystic neoplasms are multi-loculated with fine internal echoes and thick, calcified walls. Intraductal papillary mucinous neoplasms (IPMNs) are distinguished by their communication with the main pancreatic duct.

Furthermore, abdominal ultrasound is a valuable tool for assessing vascular invasion and adjacent organ involvement, a critical step for determining surgical resectability. Color Doppler ultrasound is a powerful adjunct for lesion evaluation, and contrast-enhanced ultrasound could provide additional support. While acknowledging its technical limitations, such as bowel gas interference and operator dependence, the complementary relationship between trans-abdominal ultrasound and other advanced imaging modalities, including computed tomography, magnetic resonance imaging, and endoscopic ultrasound, is essential in patient management.

In summary, transabdominal ultrasound remains an indispensable, accessible, and essential tool in the clinical workflow for the management of pancreatic neoplasms.

GI-S03

Decision Making of Biliary Disease According to US Findings

Hsiang-Yao Shih
Division of Gastroenterology, Department of Internal Medicine, Kaohsiung Medical University Hospital

Ultrasound (US) is an appropriate first-line modality to evaluate biliary disease because of its convenience, real-time imaging capability, and lack of radiation exposure. Ultrasound for bile duct

evaluation can be divided into trans-abdominal and endoscopic (EUS) ultrasound. Trans-abdominal ultrasound can provide adequate information about the bile duct, while endoscopic ultrasound can obtain higher quality images and better delineate the distal common bile duct.

The biliary system includes the bile duct and gallbladder (GB), and the bile duct is divided into intrahepatic and extrahepatic components. The findings on US may include stones (GB stones, bile duct stones), polypoid lesions, abnormal distention/ dilation, and wall thickening. Stones in different locations require different management approaches. The causes of GB distention or biliary dilation due to obstruction might be benign entities such as stones and chronic inflammation, or malignant entities such as cholangiocarcinoma or extraluminal malignancy with encasement. We suggest performing further biliary imaging examinations to clarify suspicious lesions, such as computed tomography (CT) or magnetic resonance imaging (MRI).

To relieve symptomatic obstruction, biliary drainage should be attempted either endoscopically (endoscopic retrograde biliary drainage [ERBD], endoscopic transpapillary gallbladder drainage [ETGBD], endoscopic ultrasound-guided biliary drainage [EUS-BD], endoscopic ultrasound-guided gallbladder drainage [EUS-GBD]) or radiologically (percutaneous transhepatic biliary drainage [PTBD], percutaneous transhepatic gallbladder drainage [PTGBD]). For abnormal wall thickening, tissue acquisition should be attempted for further diagnosis. In addition to endoscopic retrograde cholangiopancreatography (ERCP) and CT-guided tissue acquisition, tissue can now be obtained through cholangioscopy or EUS-guided fine needle aspiration/biopsy (EUS-FNA/B).

The US findings of the biliary system provide the pivotal starting point for further management. Combined with signs, symptoms, and laboratory findings, appropriate decisions can be made to evaluate and treat biliary diseases.

US Pictures of Treatment Devices for Digestive Diseases

Hsiu-Po Wang
National Taiwan University Hospital

With advances in treatment modalities for digestive diseases, the placement of intra-abdominal prostheses and devices has become increasingly common, using percutaneous, transpapillary, EUS-guided transluminal, or intraluminal approaches. Ultrasonographers should therefore be familiar with their sonographic appearances.

Common intra-abdominal devices include:

- Percutaneous: PTCD, PTGBD, pseudocyst/WON drainage tube, abscess drainage tube
- Transpapillary: ERBD (plastic/metallic), ERGBD, ERPD
- EUS-guided transluminal (interventional EUS): EUS-HGS, EUS-CDS, EUS-GBD, EUS-HDS, EUS-PD, EUS-GJ/JJ, EUS-PCF drainage
- Luminal stenting: Esophagogastric junction stenting, enteric stenting, colon stenting
- Abscess drainage: Liver abscess, intra-abdominal abscess

Ultrasound can be applied for pre-procedural and post-procedural evaluation, assessment of treatment outcomes, and monitoring of stent function.

In this presentation, we will demonstrate ultrasound images of stents and drainage tubes, and discuss ultrasound-based methods for evaluating their function.

GI-S05

.

GI-S06

GI US for Clinical Decision Making

Hsiu-Po Wang
National Taiwan University Hospital

Ultrasound (US) of the gastrointestinal (GI) tract has emerged as a valuable diagnostic and monitoring tool that complements traditional endoscopy and cross-sectional imaging. Advances in high-frequency probes, Doppler techniques, contrast-enhanced ultrasound (CEUS), and elastography have expanded its clinical utility beyond hepatobiliary and pancreatic applications. However, the new techniques are undergoing a very high level of subjectivity, especially contrast-enhanced ultrasound and elastography of the GI tracts.

Role of GI US in clinical decision making includes triage in emergency (appendicitis, obstruction, diverticulitis). Therapy monitoring in Crohn's disease (non-invasive follow-up instead of repeated CT/MRI) is less common in Taiwan. Surgical planning: defining the extent of disease, complications (fistula, abscess). Treatment response: CEUS and Doppler correlate with inflammatory activity, then guide medical vs surgical intervention. Surveillance: safe, repeatable for chronic GI diseases.

In the acute setting, ultrasound aids in the rapid diagnosis of appendicitis, diverticulitis, bowel obstruction, and selected ischemic conditions. Neoplastic lesions of the stomach, small bowel, and colon can also be detected, with ultrasound serving as a noninvasive surveillance option in selected patients. Appreciation of echo signs is essential. However, any echo signs are not specific to one disease. For example, the creeping sign is wrongly used for the golden sign of IBD.

Although operator dependency and limited visualization in obese patients or gas-filled segments remain challenges, standardization efforts and integration of advanced imaging techniques continue to enhance diagnostic accuracy. GI tract ultrasound thus represents an evolving, patient-centered approach to clinical decision making in both acute and chronic gastrointestinal diseases.

Color Doppler Ultrasound for Vascular-related Digestive Diseases

Ren-Jow Liang
Department of Gastroenterology, En Chu Kong Hospital, Taipei, Taiwan

Transabdominal ultrasound (US) may be regarded as the first imaging procedure for the diagnostic work-up and follow-up of gastro-intestinal (GI) tract disease in clinical practice. Unlike computed tomography (CT) and magnetic resonance imaging (MRI), it provides an available, noninvasive, inexpensive method for evaluating the gut without the use of ionizing radiation. Color Doppler US(CDUS) can yield useful information about blood flow in splanchnic vasculature, the bowel wall and its supporting mesentery when used in conjunction with gray-scale US finding and clinical symptoms.

For splanchnic vasculature, CDUS can be applied in the diagnosis of portal hypertension-related gastric or duodenal varices and cavernous transformation, midgut malrotation, abdominal aortic dissecting aneurysm, mesenteric ischemia/ aeroportia and arterial-venous shunting. For intramural vasculature, CDUS with state-of-the-art imaging equipment (eg. Superb microvascular image) allows sensitive detection of blood flow in the abnormal bowel wall. Hypervascularization in disease activity of inflammatory bowel disease, infection/inflammation process (eg. bacterial/TB enterocolitis, pseudomembranous colitis, diver-ticulitis) and abdominal mass (eg. colon cancer, gastrointestinal stromal tumor, actinomycosis, hematoma) can be evaluated by CDUS. Viability of bowel loops can also be evaluated by CDUS and lack or decrease of bowel Doppler signal suggests impending vascular insufficiency (eg. incarcerated hernia, strangulation of bowel, intussusceptions). Diminished vascularity is a specific, although probably not sensitive, sign of bowel ischemia.

Although gray-scale US with CDUS should not be considered a replacement of CT/MRI, there is value in a multimodality imaging approach when assessing and following up patients with acute and subacute abdominal symptoms. In this talk, the

characteristic sonographic features of the GI disorders will be demonstrated by static images and dynamic cine clips.

GI-S08

Current Situation of AI in Ultrasound for Digestive Disease

Kuan-Chih Chen
Far Eastern Memorial Hospital

Artificial intelligence (AI) has rapidly transformed medical imaging, and ultrasound for digestive diseases is emerging as a key area of application. Traditionally, abdominal and endoscopic ultrasound have been limited by operator dependence, variable image quality, and subjective interpretation. Recent advances in machine learning and deep learning now enable automated detection, segmentation, classification, and quantitative analysis across a broad spectrum of digestive conditions.

In hepatology, AI models trained on B-mode and contrast-enhanced ultrasound (CEUS) images can reliably grade metabolic dysfunction–associated steatotic liver disease (MASLD) and classify focal liver lesions with accuracy approaching expert radiologists. Regulatory milestones, such as the FDA clearance of AI-assisted quantitative ultrasound devices for liver fat and stiffness assessment, highlight the growing clinical translation. In pancreatology, endoscopic ultrasound (EUS) has become a major frontier: deep learning systems demonstrate high sensitivity and specificity for pancreatic tumor characterization. Moreover, AI applied to contrast-enhanced harmonic EUS (CEH-EUS) and time–intensity curve (TIC) analysis shows promise for tumor perfusion quantification and treatment response prediction.

For biliary and gallbladder diseases, AI may provide polyp risk stratification. In inflammatory bowel disease, intestinal ultrasound (IUS) combined with AI offers automated bowel wall thickness measurement and prediction of mucosal healing, potentially reducing reliance on invasive endoscopy.

Despite this progress, widespread clinical adoption faces challenges: external validation across devices, standardized annotation, real-time workflow integration, and demonstration of cost-effectiveness. Nevertheless, the trend is clear—AI is moving ultrasound from a subjective, operator-dependent tool toward a quantitative, reproducible, and decision-supportive modality. Over the next few years, integration of multimodal data, explainable AI, and prospective clinical trials will determine its definitive role in digestive disease management.

GI-S09

Role of US-guided Intervention: Comparison of Liver Tumor Biopsy Between a Medical Center and a District Hospital: A 10-year Retrospective Study

Yang-Yuan Chen
Department of Gastroenterology,
Changhua Christian Hospital and Yuan-Lin branch

Background:

Percutaneous liver biopsy remains a cornerstone in diagnosing focal liver lesions. However, variations in practice patterns, complication rates, and diagnostic yields between medical centers and district hospitals are underexplored.

Aim:

To compare liver tumor biopsy characteristics, outcomes, and complications between a medical center and a district hospital over a 10-year period.

Methods:

This retrospective cohort study reviewed percutaneous liver biopsies performed from January 2015 to June 2025 at a tertiary medical center and a district hospital in central Taiwan. Data including patient demographics, indications, imaging guidance modality, pathology results, diagnostic yield, and complications were analyzed.

Conclusion:

Medical centers demonstrated a higher diagnostic yield in ultrasound-guided biopsy, while district hospitals showed comparable safety profiles. Strengthening inter-institutional protocols and radiologic support may enhance diagnostic outcomes in lower-tier facilities.