GI-I01

Needle Tract Seeding after Endoscopic Ultrasound-guided Tissue Acquisition of Pancreatic Tumors: A Nationwide Survey in Japan

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INTRODUCTION: Endoscopic ultrasound-guided tissue acquisition (EUS-TA) plays a crucial role in the diagnosis of pancreatic tumors. However, some case reports and case series reported needle tract seeding (NTS) as a later complication after EUS-TA of pancreatic invasive ductal carcinomas (PDACs), with no large surveys investigating the occurrence rate of NTS after EUS-TA.
Objectives: The present study aimed to investigate the current status of needle tract seeding (NTS) after EUS-TA of pancreatic tumors based on a nationwide survey in Japan.
Methods: Patients who underwent surgical resection of primary pancreatic tumors after EUS-TA performed between April 2010 and March 2018 were surveyed. The incidence rates of NTS were determined, and compared in patients with pancreatic ductal adenocarcinomas (PDACs) and other tumors, and in patients who underwent transgastric and transduodenal EUS-TA of PDACs. The detailed features and prognosis of patients with NTS were also assessed.
Results: A total of 12,109 patients underwent surgical resection of primary pancreatic tumors after EUS-TA. The overall incidence rate of NTS was 0.330%, and the NTS rate was significantly higher in patients with PDAC than in those with other tumors (0.409% vs. 0.071%, P=0.004). NTS was observed in 0.857% of patients who underwent transgastric EUS-TA, but in none of those who underwent transduodenal EUS-TA. Of the patients with NTS of PDACs, the median time from EUS-TA to occurrence of NTS and median patient survival were 19.3 and 44.7 months, respectively, with 97.4% of NTS located in the gastric wall and 65.8% of NTS resected. The patient survival was significantly longer in patients who underwent NTS resection than in those without NTS resection (P=0.037).
Conclusions: NTS appeared only after transgastric not after transduodenal EUS-TA. Careful follow-up provides an opportunity to remove localized NTS lesions by gastrectomy.

GI-S01

Application of Contrast in EUS-guided Tissue Acquisition

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Endoscopic ultrasonography (EUS) has been the mainstay modality for evaluating the abnormalities of bilio-pancreatic system and subepithelial gastrointestinal lesions. By means of EUS-guided fine needle aspiration/biopsy (EUS FNA/B) so called EUS-guided tissue acquisition (EUS TA), the endoscopists could make the diagnosis of lesions. The endoscopists might encounter some scenarios. No preferred impression of lesions before EUS TA according to other images. The lesion was huge but the result of EUS TA was in-conclusive. What should we do if we could not obtain conclusive diagnosis by EUS TA for the first time?

As we know the contrast agent has been applied over liver lesions by abdominal sonographers for long time and the endosonographers could perform it under EUS nowadays. Under contrast enhanced harmonic EUS (CEH EUS) the endosonographers could differentiate the lesions by enhancement pattern before puncture. When the lesion is huge CEH EUS could identify the avascular site (like necrosis) and the endosonographers could choose the optimal area for tissue acquisition. The endosonographers could make the more accurate suggestion with the information provided by CEH EUS if the prior result of EUS TA was in-conclusive.

Not only solid lesions but also cystic ones could benefit from CEH EUS for targeted tissue

acquisition. The horizon of contrast in EUS TA is widening.

GI-S02

EUS-guided Choledochoduodenostomy

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Endoscopic retrograde cholangiopancreatography (ERCP) is the first choice for biliary drainage in malignant distal biliary obstruction. When cannulation of the bile duct fails during ERCP, percutaneous biliary drainage (such as PTCD or PTCCD) or surgical bypass are the only options in the past. It is inconvenience to have an external drainage bag after percutaneous drainage, and the long recovery period after surgical bypass delays further treatments of malignancies. In the era of endoscopic ultrasound (EUS) - guided biliary drainage, a new option of internal biliary drainage is available now. Choledochoduodenostomy (CDS) is a safe, effective and minimal invasive procedure when it is performed in experienced hands. Under the guidance of EUS, an artificial anastomosis is created between the bile duct and duodenum. A metallic or plastic stent is left to maintain the fistula for biliary drainage. Its safety and efficacy have been demonstrated by many studies. In this lecture, we will summary the current evidences of CDS. The indications, contraindications and techniques of CDS will be presented.

GI-S03

Endoscopic Ultrasound-guided Biliary Drainage

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Endoscopic retrograde cholangiopancreatography (ERCP) is the preferred method for gaining biliary access, and managing both benign and malignant biliary obstructions. However, biliary cannulation can fail in 4% to 16% of ERCPs. Failure can occur owing to altered anatomy, periampullary diverticulum, ampullary pathology, tumor infiltration of the papilla, or gastric outlet obstruction. When ERCP fails, other options include surgical drainage, percutaneous transhepatic drainage (PTBD), and endoscopic ultrasound-guided biliary drainage (EUS-BD).

EUS-BD has emerged as a safe and effective means of biliary decompression following failed ERCP. Although it is a complicated procedure requiring skilled endoscopists, it has several demonstrated advantages over surgical biliary drainage and PTBD. A recent review found that EUS-BD was associated with better clinical success, fewer adverse events, and a lower rate of reintervention than PTBD. In the majority of these studies, EUS-BD was used as rescue procedure when ERCP has failed. Recently, EUS-BD and ERCP have been compared in randomized, controlled studies for primary biliary drainage for malignant obstruction. All studies showed no significant difference in rates of technical or therapeutic success, or rate of adverse effects. EUS-BD may be a safe and effective alternative to ERCP as a primary means of malignant biliary decompression, but further studies are warranted.

Although EUS-BD is an effective, safe, and innovative technique for biliary drainage when conventional ERCP fails, it is a complicated procedure that requires careful patient selection, highly skilled endoscopists, and has a learning curve. The accepted indications for EUS-BD are failed ERCP, altered anatomy, tumor preventing access into the biliary tree, and contraindication to percutaneous access such as large ascites.

GI-S04

EUS-guided Pancreatic Duct Drainage

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Endoscopic ultrasound (EUS)-guided PD (EUS-PD) is now increasingly used as an alternative technique for drainage in symptomatic pancreatic duct obstruction or leakage, which includes EUS-guided rendezvous (EUS-RV) and EUS-guided transmural drainage (EUS-TMD). In cases with normal anatomy, EUS-RV should be the first approach, whereas EUS-TMD can be selected in cases with surgically altered anatomy or duodenal obstruction. In one literature review, technical success and adverse event rates were 78.7% and 21.8%, respectively. The technical success rate of EUS-RV appeared lower than EUS-TMD due to the difficulty in guidewire passage. Short-term adverse events included abdominal pain, acute pancreatitis, bleeding, and issues associated with pancreatic juice leakage such as perigastric or peripancreatic fluid collection. Development of dedicated devices and standardization of EUS-PD procedure are necessary in future.

GI-S05
EUS-guided Management of Pseudocyst / WON

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Peripancreatic fluid collections (PFCs) result from acute or chronic pancreatic inflammation that suffers a rupture of its ducts. PFCs can be classified according to the time of evolution and the content of the collection. PFCs Within the first 4 weeks after onset of acute pancreatitis are acute PFCs or acute necrotic collections, whereas PFC More than the first 4 weeks are pancreatic pseudocysts or walled-off necrosis (WON). Most PFCs do not require treatment and have a spontaneous resolution, but these require treatment when they produce symptoms (abdominal pain, bleeding, or infection) or when they produce biliary or gastroduodenal obstruction. The options of treatment for PFCs included endoscopic, percutaneous, and surgical management. Endoscopic ultrasound (EUS)-guided drainage is a procedure that allows for simple, reliable, and effective drainage without putting any burden on the pancreatic parenchyma with lower morbidity and mortality than the surgical or percutaneous treatments.

GI-S06
EUS-guided Liver Biopsy

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The diagnosis of liver masses is traditionally accomplished by percutaneous biopsy under ultrasonographic (PC-LB), computed tomographic or fluoroscopic guidance (CT-LB). However, there are several contraindications or limitation for PC-LB and CT-LB.

Using endoscopic ultrasound (EUS)-guided fine needle aspiration (EUS-FNA) using a curved linear array echoendoscope can provide the diagnosis and staging of liver metastases or masses and this has been studied in previous studies. Recently, EUS-guided fine needle biopsy (EUS-FNB) with core biopsy needle could increase diagnostic accuracy. So, EUS-FNA could be an alternative method for tissue acquisition of liver solid masses. EUS- guided liver biopsy (EUS-LB) is a safe and effective method for tissue sampling of liver lesions. We will focus on approaching liver lesions to perform EUS-LB and evaluating the diagnostic accuracy of EUS-LB sampling compared with PC-LB and CT-LB according to our study and previous studies.

GI-S07
EUS- guided Tumor Ablation

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In the last decade, due to the advent of advanced technology of EUS machine system and needle advice, several applications based on endoscopic ultrasound (EUS) and EUS-guided-fine-needle aspiration biopsy (EUS-FNA/B) have been developed, making these approaches from diagnostic purpose to expand to interventional field. We can position the scope accurately to the target of pancreas or lesions surrounding the gastrointestinal tract under real -time guidance to perform tumors ablation. The EUS-guided ablation procedure has the advantage of minimal invasiveness via shorter route and real-time monitoring to avoid damaging the nearby structures around the tumor, like major vessels to achieve ablation effect. Given that surgery causes significant short-term and long-term adverse events, EUS-guided tumor ablation is a potential candidate of alternative treatment choice for those small sized P-NETs.

EUS-guided alcohol ablation to symptomatic pancreatic insulinoma was first reported in 2006 with good clinical response. The EUS-guided radiofrequency ablation (RFA) was first applied in the management of P-NET in 2015. The effectiveness of functional P-NET symptom control is 93.9% to alcohol ablation and 96% to RFA. In addition, EUS guided ethanol injection to HCC is also feasible.

In conclusion, EUS-guided tumor ablation to HCC or functional P-NET with low malignant potential seems to have high effectiveness for those patients who are unsuitable for surgery. However, we need more outcome data and safety reports for this procedure.

GI-S08
NAFLD: Challenge of Image Diagnosis and Relation with HCC

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Even though liver biopsies remain the gold standard for the diagnosis of non-alcoholic steatohepatitis (NASH), non-alcoholic fatty liver disease (NAFLD) is commonly diagnosed by liver ultrasound in clinical practice. NAFLD is becoming the leading cause of liver morbidity worldwide; therefore, NAFLD-related hepatocellular carcinoma (HCC) is also on the rise. Our recent study suggested that NAFLD has become a major public health problem in Asia, with a prevalence around one third. The annual incidence of NAFLD-related HCC is expected to increase by 45-130% by 2030. The highest risk of HCC exists in NAFLD patients with advanced fibrosis or cirrhosis, although 20-50% of HCC cases arise in NAFLD patients with an absence of cirrhosis. Moreover, the occurrence of NAFLD-related HCC in patients without advanced fibrosis is increasingly recognized and poses a significant challenge regarding cancer surveillance. In our previous study based on the Taiwan's National Health Insurance Database, the 10-year cumulative incidence of HCC was 2.73%, but the 10-year cumulative HCC incidence could be as high as 12.41% in older (age >55 years) patients with ALT elevation. It is urgently important to develop useful risk stratification scores and models to identify NAFLD patients at high risk of HCC development, so they can be enrolled into surveillance programs. Furthermore, there is increasing recognition that surveillance using ultrasound alone offers insufficient diagnostic accuracy. This is particularly true for patients with NAFLD, in whom ultrasound visualisation and test performance is impaired in the setting of obesity. In this talk, the risk of HCC and the challenges in Image diagnosis in NAFLD patients will be discussed.

GI-S09
Liver Fibrosis and Hepatocellular Carcinoma

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The degree of hepatic fibrosis has been a strong predictor of risk for hepatocellular carcinoma (HCC) development. It also is associated with HCC recurrence after curative treatment of HCC, including resection and local ablation therapy. Hepatic fibrosis has traditionally been evaluated by liver biopsy which is an invasive procedure and associated with complications including pain and mortality. Non-invasive methods including ultrasound (US)-based techniques has been developed in assessing hepatic fibrosis with good performance and accuracy for advanced fibrosis stage and cirrhosis diagnosis. In this era of effective anti-viral agents for control and eradication of chronic hepatitis B and C, US-based techniques are important and have the potential in dynamically monitoring and predicting outcome for those patients underwent antiviral treatments. In our experience of transient elastography (TE) in prediction of HCC development, we had found that chronic hepatitis C patients with liver stiffness >=12 kPa was associated with high risk of HCC development. And liver stiffness by TE is an alternative to histology fibrosis in HCC risk assessment. Based on TE at/after sustained virological response, a scoring system was developed for risk stratification of HCC development. Liver stiffness >=11 KPa by TE is also associated with higher risk of major complications for HCC patients undergoing resection. For patients with early-stage HCC after surgical resection, liver stiffness >=8.5kPa by TE before resection was also a risk factor of HCC recurrence.

GI-S10
Liver Metastasis Diagnosis: CEUS versus MRI

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Contrast enhanced ultrasound (CEUS) is an imaging technique which appeared on the market around the year 2000with excellent tolerance and safety profiles has notably improved liver evaluation for several applications. Studies have shown that CEUS is more sensitive than conventional US and may provide similar diagnostic performance to other imaging modalities (CT and MRI) for the assessment of liver metastases, that could be usefully employed in the staging of patients. In this talk, the current evidence will be presented and discussed.

GI-S11
Ablation for HCC >3cm: RFA with Multi-electrodes

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1. 腫瘤大小很重要，但是腫瘤位置跟肝臟功能更重要。
   Tumor size matters but tumor location and liver reserve play more crucial roles.
2. 不管黑貓白貓，會抓老鼠的都是好貓。
   No best treatment but appropriate one.
3. 使用的器械只是治療成功的一部分，而不是全部。
   Many factors contribute to success, including device, operator, working environment, and facility.
4. 武功不能只有眼前路，沒有身後身。
   Thinking about failure and ways to prevent it.
5. 以神遇而不以目視，官知止而神欲行。
   Free hand and free needles. From left and from

right.

6. 治療區域的形狀跟治療區域的大小一樣重要。
   Safety margin matters.
7. 以簡御繁。
   Keep Simplicity in mind.

GI-S12

Ablation for HCC >3cm: Microwave Ablation

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Although many new treatment methods are available in recent years, local ablation still plays the most important role of BCLC-0/A HCCs treatment and metastatic liver tumors. New generation Microwave ablation emerges recent years and provides more flexible treatment methods in malignant liver tumors. The well-known advantage of MWA is a faster/powerful modality comparing to RFA and easily overcomes vessel-induced heat-sink effect. Besides, the mechanism of MWA heating up the tissue, as comparing to RFA by thermal diffusion, is mainly based on uniform fraction heat within effective EM field. Theoretically, It allows us to get a relatively better treatment effect in special tissue nature such as central necrosis in metastatic neoplasm and desmoplastic change in cholangiocarcinoma. So MWA might be a good candidate to perform local ablation for larger lesions, both HCC or non-HCC liver neoplasm. However, special characters of new-generation MWA needs to be taken into consideration. First, it can provide a precise and predictable ablation area, so that a good pre-treatment planning is more important than ablation procedure itself. Second, because of high temperature in the core of MWA area (up to 150C), surrounding tissue/structure damage might be irreversible if happen and we should be cautious about the complication issues. Third, different brands of MWA will output different ablation style/area and which brand we select according to the tumor condition. In conclusion, MWA might play a role in certain tumor situation which is difficult to reach a complete necrosis by using RFA only in the past and it is very important to organize a patient/tumor-oriented treatment planning.

GI-S13

Ablation for Liver Metastasis : RFA versus Microwave

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The liver is the most common site of metastasis in patients with colorectal cancer. About 14 to 18% of the patients with colorectal cancer present metastasis at the first medical consultation. and 10 to 25% are diagnosed at the time of primary tumor resection. Eventually, about 70% of patients with colorectal cancer will develop metastasis in the liver. Liver resection is golden standard for resectable liver metastasis in colorectal cancer. However, only 10–20% of patients are amenable to surgical resection. According to NCCN 2002 guideline for colon cancer, ablative techniques can also be considered when unresectable and amenable to complete ablation.

About ablation techniques, microwave ablation can create faster and larger ablations with less heat sink effect. Takahashi H et al. demonstrated the local tumor recurrence rate of Microwave vs. Radiofrequency ablation for CRLM was 10% vs 20%. Martino et al. also showed microwave ablation had lower local tumor progression and better disease free survival and overall survival as compared to radiofrequency ablation for resectable CRLM. In this lecture, the experience of ablation for CRLM at NTUH will also be shared.