

Meeting Report

Current Endoscopic Ultrasound Perspectives from 2012 Digestive Disease Week Meeting

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Abstract:

Endoscopic ultrasound (EUS) was one of the leading topics in 2012 DDW meeting and some new progresses were highlighted at the EUS monothematic symposium during the period. Although EUS-fine needle aspiration (FNA) has increased the accuracy of EUS in the diagnosis of pancreatic diseases and biliary diseases, controversies still exist in its application such as safety, cost effectiveness and the choice of needle. Meanwhile, EUS may also function as a therapeutic approach, and more and more digestive diseases could be treated with interventional EUS. This report will focus on the above aspects and some progresses of interventional EUS discussed in the meeting.

Keywords:

endoscopic ultrasound; biliary disease; pancreatic disease; interventional procedure

INTRODUCTION

The DDW meeting was held in May 20-22, 2012 in San Diego, USA. Many doctors from different countries attended this meeting. Endoscopic ultrasound (EUS) was an important topic in the meeting because it has been widely used in diagnosis and treatment of gastrointestinal and pancreatic diseases. New progresses discussed in the meeting about pancreatic diseases, biliary diseases and interventional EUS will be summarized as follows.

PANCREATIC DISEASES

EUS-fine needle aspiration (FNA) is increasingly recognized as an indispensable tool for the diagnosis and staging of solid pancreatic lesions (SPLs). Rei Suzuki (University of Texas MD Anderson Cancer Center, Houston, Tex., USA) presented a study on the diagnostic value of repeat EUS-FNA for solid pancreatic lesions at a tertiary medical center. He found in his study that the overall clinical impact of repeat EUS-FNA was 80.0% (40/50) by providing a conclusive diagnosis and no complications were seen in all cases. In conclusion, he stated that repeat EUS-FNA for SPLs at a tertiary-referral center had a clinical impact in 80.0% of patients when performed by experts for a similar

clinical indication.

Association between EUS-FNA and recurrence or survival in patients with resectable pancreatic cancer was discussed by Vasco Eguia (Columbia University College of Physicians and Surgeons, New York, NY, USA). EUS-FNA is the preferred method to sample pancreatic masses. Concerns have been raised that EUS-FNA may adversely affect outcomes in resectable pancreatic cancers, via mechanisms such as tumor seeding. In his study, multivariate analysis showed only perineural invasion was the independent predictor of time to recurrence (P value < 0.001) and there was no significant difference in survival with respect to performing EUS-FNA (Log rank $P = 0.1628$). In a univariate Cox proportional hazards model, EUS-FNA was not a significant predictor of time to recurrence ($P = 0.16$). In a multivariate Cox proportional hazards model, only perineural invasion was the independent predictor of time to survival. Therefore, he concluded that there was found no association between EUS-FNA and recurrence or survival in patients with resectable pancreatic cancer, and utilizing EUS-FNA as a diagnostic tool when necessary is reasonable and safe.

EUS-Trucut biopsy (EUS-TCB) has been proposed as an optimal technique to obtain adequate pancreatic tissue for histologic diagnosis. However, EUS-TCB has certain drawbacks that restrict its use in clinical practice, i.e., a need for multiple passes and difficulty with angulation (especially in targeting the pancreas head). Recently, a new core histology needle (CHN) has been designed (in 3 sizes) to optimize core acquisition and may potentially overcome these limitations. Do Hyun Park (University of California,

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USA) analyzed trucut biopsy needle (TCB) and new core histology needle (CHN, 19-G, 22-G, and 25-G). Both TCB-19-G and CHN-19-G were superior to CHN-22-G and -25-G for histologic core yield. Given the high core yield in the pancreas and relatively easy maneuverability, CHN-19-G may be an alternative to TCB-19-G in clinical use, especially in the pancreas head. His study found that no difference was seen in histologic quantity and quality between TCB and CHN (19-G, 22-G and 25-G), except a higher proportion of blood in core specimen in CHN-19-G compared to TCB-19-G ($P = 0.019$).

A new cytologic brushing system was explained by Jose Larino-Noia (University Hospital of Santiago de Compostela, Spain). EUS-FNA is the technique of choice for the diagnosis of pancreatic lesions. Unfortunately, cytologic analysis of intracystic material obtained by EUS-FNA shows a low diagnostic accuracy due to the low cellularity of the obtained samples. Recently, a new cytologic brushing system has been developed with the aim of improving the quality of the material obtained by FNA. A prospective, randomized, multicenter, open and comparative trial of Echobrush versus FNA for the cytologic diagnosis of cystic tumors of pancreas was conducted by Jose Larino-Noia and his team. Patients admitted to the EUS units of six different University hospitals for the evaluation of pancreatic cystic lesions (>15 mm in diameter) by EUS-FNA were included and randomized into two groups. The result showed that Echobrush did not improve the diagnostic accuracy of standard EUS-FNA for differential diagnosis of cystic pancreatic lesions.

Arleen M. Ortiz (Mayo Clinic, Jacksonville, FL, USA) delivered the topic of EUS elastography in differentiating chronic pancreatitis from pancreatic cancer. EUS elastography is based on the fact that the compression of tissue will produce smaller strain (displacement) in hard tissue than soft one. The meta-analysis by Arleen M. Ortiz MEDLINE (from 1966-2011) and abstracts of gastroenterology meetings in the last 3 years were searched (search date October 2011), and studies investigated the diagnostic accuracy of EUS elastography in differentiating benign from malignant pancreatic lesions were also included. The meta-analysis showed that EUS elastography had a high sensitivity and reasonable specificity in differentiating benign from malignant pancreatic lesions. It may be useful in cases where the standard EUS-FNA is inconclusive.

BILIARY DISEASES

EUS provides valuable information and often mitigates the need for endoscopic retrograde cholangio-pancreatography (ERCP) with its implicit risk. Can EUS prevent unnecessary ERCPs? This question was discussed by Vernon J. Carriere (Wake Forest University Baptist Medical Center, Winston-Salem, NC, USA), Pragathi Kandunoori (University of Texas, TX, USA), Shubham Garg (University of Texas, TX, USA) and Keum Nam Rim (University of Ulsan College of

Medicine, Seoul, Korea)

Vernon J. Carriere evaluated the number of ERCPs that were canceled as a result of EUS findings. From the large cohort of patients and experience, they found that EUS findings obviated the need for an ERCP in approximately 1/3 of patients that would have otherwise undergone an ERCP first. The group of patients that was most likely to benefit from EUS prior to ERCP included those with suspected choledocholithiasis, common bile duct (CBD) stricture or dilation, and idiopathic pancreatitis. In addition, their tandem procedures limited post ERCP complications as well as anesthesia exposure.

Pragathi Kandunoori presented a research to determine whether EUS performed prior to ERCP would obviate the need for diagnostic ERCPs in patients with low probability of choledocholithiasis and whether abdominal ultrasound (US) could reliably predict bile duct stones. The results showed that in patients received ERCP first due to suspected common bile duct stones, 28% of all cases were negative. In patients undergone EUS first, 53% of them avoided unnecessary ERCP. Either ERCP or EUS was poor in detecting bile duct stones or ductal dilation. Thus, patients with low clinical suspicion of choledocholithiasis should initially undergo EUS examination of the bile duct prior to ERCP. ERCP was recommended for stone removal in patients with positive intra-operative cholangiograms (IOC). However, the false-positive rate of IOC was as high as 60%, and the complication rate of ERCP (including infection, bleeding, perforation, and pancreatitis) ranged from 3% to 11%. Lennart Choo undertook a prospective blinded study of EUS prior to ERCP for consecutive patients with positive IOC. EUS was performed prior to ERCP at the same sedation by a different physician, and the physician performing ERCP was blinded to the EUS results. In this ongoing prospective study, the false-positive rate of IOC was 56%, and no clinical, biochemical or IOC characteristics seem to predict the presence of choledocholithiasis. EUS could better stratify which patient required an ERCP, with a sensitivity of 75% and specificity of 100% in identifying choledocholithiasis in positive IOC patients prior to ERCP.

Shubham Garg evaluated the cost effectiveness of performing EUS to detect bile duct stones, prior to ERCP, in patients with intermediate probability of stones. The analysis of the decision tree revealed that at 60% pretest probability of biliary stones, EUS strategy dominated clearly the ERCP strategy. The cost associated with EUS strategy (\$1662) was lower than that with ERCP (\$1752). On sensitivity analysis, the strategies had similar costs at 68% pretest probability of stones.

Keum Nam Rim described a study on contrast enhanced harmonic-endoscopic ultrasound (CEH-EUS) in gallbladder (GB) and bile duct lesions. Recently, CEH-EUS was introduced and it became possible to evaluate the dynamic enhancement pattern under real time ultrasound imaging. Keum Nam Rim concluded that malignant gallbladder mass showed different enhancement pattern from benign lesions.

CEH-EUS demonstrated clearly the dynamic enhancement patterns of bile duct lesions. It was helpful for the differential diagnosis of GB and bile duct lesions.

INTERVENTIONAL EUS

Progress in interventional EUS was discussed by Byeong Jun Song (Seoul National University College of Medicine, Seoul, Korea) and Monica Gaidhane (University of Virginia Health System, Virginia, USA). Byeong Jun Song performed EUS-guided ethanol lavage in incidental pancreatic cysts, and investigated the safety and long-term treatment response. Thirty-seven patients were enrolled. The mean diameter of the cysts was 29.1 mm (range 20–50 mm) and 25 cysts were oligocystic. The cysts were located in the head/uncinate of the pancreas in 10 patients (27.0%), in the body in 16 patients (43.2%) and in the tail in 11 patients (29.7%). After the procedure three patients had fever without documented bacteremia, 6 patients had mild abdominal pain, and only 2 patients had mild pancreatitis. The mean follow-up period was 25.4 months. The results showed that EUS-guided ethanol lavage appeared to be a safe method for treating incidental pancreatic cysts and complete resolution was achieved in 40% of patients after 12 months.

Effective palliative treatments for pancreatic cancer are limited, including surgical procedures or chemotherapy. Radiofrequency ablation (RFA) is a technique using high-frequency alternating current to ablate diseased tissue and has been used to treat tumors in various organs. However, the lack of well shaped probes fitting into the EUS-needle limits the size of the coagulative necrosis and its potential for clinical applications. In the study by Monica Gaidhane (University of Virginia Health System, Virginia, USA), five Yucatan pigs underwent EUS-guided RFA of the head of their pancreas. Using an EUS-needle, RFA was applied with 6 mm of the probe exposed at 4 watts for 5 min, 5 watts for 0.9 min and 6 watts for 0.2 min. Then with 10 mm of the probe exposed in the pancreas, RFA was performed at 4 watts for 4.3 min, 5 watts for 1.4 mins and 6 watts for 0.8 min. Monica Gaidhane concluded that EUS-guided RFA of the pancreatic head with the monopolar probe through a 19-G needle was well tolerated in 5 Yucatan pigs, with minimal degrees of pancreatitis. However, its efficacy remains to be determined

in further studies.

PROSPECTS OF EUS

EUS has recently evolved through technological improvement of equipment such as real-time sono-elastography, contrast-enhancement and 3D reconstructions. EUS seems likely to represent the technique for early diagnosis, staging and stratification of prognosis. EUS-FNA or EUS-assisted procedures are also considered choices for pathological confirmation of advanced cases, as well as for targeted treatments. All of these procedures lead to a significant clinical impact of EUS, especially due to the improved clinical decision-making algorithms.

Recently, an official international journal named *Endoscopic Ultrasound* has been established and the first issue was published at the first half of this year. The editorial board conference was summoned by the editors-in-chief, Dr. Marc Giovannini and Dr. Siyu Sun during the period of DDW meeting. Most of the editorial members attended the conference and suggested that the journal would provide a great forum for exchanging new EUS techniques among the echo-endoscopists and publish the results of novel investigations with high-quality communication tools for research and development. With the practical up-to-date information on EUS, this journal will become an important milestone in the nearly 30-year EUS development.

SUMMARY

This conference opened the door for gastroenterologists and endoscopist to exchange their novel knowledge on conventional EUS and interventional procedures. Not only did it deliver new insights such as EUS elastography and contrast enhanced EUS, but also it raised some questions on EUS. Is there any new advanced EUS technique for pancreatic disease diagnosis? What would be the optimal management as combining interventional EUS and radiological technique in clinical practice? What are the controversies in interventional EUS? All the above questions were discussed by doctors attended the conference and they also provided some useful information on EUS application in the future.