

Impact of Endoscopic Ultrasound (EUS) Procedure in Pancreatico-biliary Disorders in Indonesia

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ABSTRACT

Pancreato-biliary disorders are the challenging disorders in gastroenterology practice. It is well-known that endoscopic retrograde cholangiopancreatography (ERCP) is a common procedure in managing pancreato-biliary disorders. However, imaging modalities such as abdominal CT scan and MRI has been successfully reduced the unnecessary ERCP to avoid several potential complications. Recently, endoscopic ultrasound (EUS) procedure has become an important tool due to the limitation of imaging modalities in pancreato-biliary disorders. Its ability which is not only for diagnostic, but also for therapeutic purpose has given a new insight for most gastroenterologists in their daily practice. However, the investment, cost, and the proper training curriculum are still debatable in most developing countries, especially in Indonesia.

Keywords: pancreato-biliary disorders, endoscopic retrograde cholangiopancreatography (ERCP), endoscopic ultrasound (EUS), gastroenterology

ABSTRAK

Penyakit pada saluran pankreas dan empedu merupakan kondisi yang cukup menantang di bidang gastroentero-hepatologi. Tindakan endoscopic retrograde cholangiopancreatography (ERCP) merupakan salah satu prosedur yang sering dilakukan dalam tata laksana kelainan atau gangguan pada saluran pankreas ataupun saluran empedu. Di satu sisi adanya kemajuan di bidang modalitas pencitraan seperti CT scan dan MRI telah mengurangi tindakan ERCP yang tidak perlu mengingat adanya risiko komplikasi dari tindakan tersebut. Sekarang ini adanya kemajuan di bidang endoskopi seperti tindakan endoskopi ultrasonografi (EUS) telah menjadi alat penting dalam mengatasi keterbatasan modalitas pencitraan. Alat ini tidak hanya digunakan untuk keperluan diagnostik tetapi juga untuk terapeutik. Bagaimanapun juga, pertimbangan investasi alat, harga, dan adanya pelatihan khusus masih menjadi perdebatan di negara-negara berkembang, khususnya di Indonesia.

Kata kunci: penyakit pankreatobilier, endoscopic retrograde cholangiopancreatography (ERCP), endoscopic ultrasound (EUS), gastroenterologi

INTRODUCTION

Pancreatic cancer is one of the lethal cancers in the world. It is placed the fifth rank of the top ten cancers in the world and it is the fourth commonest cancer death etiology in the United States.¹ In most Asian countries, even though pancreatic cancer is less common cancer in the field of gastroenterology, the lifestyle changing, obesity issue, and diabetes will increase the risk of pancreatic cancer in the near future.² In Japan, it is the fifth commonest cancer death etiology followed by stomach, liver and large bowel cancers.³

The screening and early detection of pancreatic cancer have made a big issue due to the location of the organ, unspecified symptoms, and also the diagnostic image limitation, such as abdominal computerized tomography (CT) scan and magnetic resonance imaging (MRI). The decision "when to screen" with comprehensive modalities is also the most challenging situation in gastroenterology practice due to poor treatment response, survival rate, and prognosis in most of pancreatic cancer patients.⁴

On the other side, biliary disorders have been dominated by gallstone disease which also can cause acute and chronic pancreatitis. Imaging modality such as magnetic resonance cholangio-pancreatography (MRCP) has become the most important tool in stone and biliary obstruction detection and it has replaced the role of endoscopic retrograde cholangio-pancreatography (ERCP) in diagnostic manner. In therapeutic purpose, ERCP has shown a tremendous impact because of its ability to drain the biliary system without any surgical procedure needed and also for intrahepatic and common bile duct (CBD) stone extraction. However, the risks of ERCP procedure such as bleeding, pancreatitis, and perforation need to be accounted in daily practice and it is the one which made the procedure should be done only when indicated.^{4,5}

The Role of Endoscopic Ultrasound (EUS) in Pancreatic Cancer

The evolution in medical technology for early screening and detection has raised a major issue because of its limitation in achieving accuracy despite the high cost and investment. The risk factors of pancreatic cancer such as diabetes mellitus, smoking, advanced age, and chronic pancreatitis have made more difficult situation in early screening and detection due to the cost burden of other non-malignancy complications. On the other side, early screening in pancreatic cancer is the only hope for longer survival

achievement even though the median survival is approximately six months. Lymph node involvement, vascular invasion, and disease-free margins are also important in disease prognosis.^{6,7}

Pancreatic malignant tumor can be located either at the head, body, or tail area, where up to 75% of cases is located within the pancreatic head. The tumor location at the body and tail area makes difficulty in early diagnosis due to non-specific symptoms. Pancreas evaluation using abdominal CT scan in patients whom are contraindicated with contrast, such as renal failure patients, will be useless due to hypovascular characteristic of the tumor. The accuracy of multidetector (MD) CT has been reported between 76-92% for diagnosing pancreatic cancer. Based on MRI studies, there is no significant diagnostic advantage over contrast-enhanced CT (sensitivity 86% on CT vs. 84% on MRI).⁸

In the past, endoscopic ultrasound (EUS) procedure was seemed not to have a bright future as it was only diagnostic viewing procedure. Pancreatic tumor less than 3 cm is seemed to be better detected with EUS examination when compared to other imaging modalities. Recently, the development of EUS procedures has been changing a lot due to linear scope availability where it is possible to do tumor biopsy through fine needle aspiration. Fine needle aspiration for diagnosis of pancreatic cancer through EUS procedure can achieve diagnostic accuracy until 85%. EUS evaluation in pancreatic malignancy has reduced the need of direct surgical procedure after abdominal CT scan or MRI evaluation, especially when the disease was already in the advanced stage. Because abdominal CT scan and MRI still have limitation in assessing vascular invasion, EUS procedure would be the most cost-effective procedure in clinical practice.^{9,10,11,12,13}

The Role of Endoscopic Ultrasound in Biliary Diseases

Common bile duct (CBD) stone and biliary tract obstruction due to malignancy (pancreatic head carcinoma, cholangiocarcinoma, and Klatskin's tumor) are the most common problem in clinical practice. ERCP is still the gold standard for pancreato-biliary evaluation; however, due to the risks of ERCP procedure, MRCP has replaced ERCP for diagnostic purpose. In diagnostic manner, claustrophobia and uncooperative patients such as elderly patients have become a barrier for examination completion. EUS procedure has been showed to be a better alternative to MRCP in assessing gallbladder and CBD.^{14,15,16,17}

In patient with undilated CBD with stone, it also has become a better approach despite the length MRI procedure time and the need of patient's cooperation, especially in the elderly.¹⁸

Biliary drainage in most malignancy cases could achieve by ERCP procedure or percutaneous transhepatic biliary drainage (PTBD). Some cases with duodenal obstruction and bilio-digestive anastomose might be easier with EUS biliary drainage (EUS-BD).^{19,20} A recent study revealed that EUS-BD was found more superior than PTBD in term of efficacy and complications.²¹ Another multicenter study showed EUS-BD was successful in 95.6% patients with obstructive jaundice due to malignancy or stricture. Complications has been reported higher in patients who underwent transhepatic route.²² In patient with undilated CBD with stone, it also has become a better approach despite the length MRI procedure time and the need of patient's cooperation, especially in the elderly.²³ However, the procedure itself would require a good training, knowledge of basic principles of ultrasound examination and skill competency.

Endoscopic Ultrasound in Developing Countries

The problem in most developing countries and especially Indonesia, the investment's cost and the procedure's cost are still become the main problem despite there is also no proper training curriculum yet. However, the need of EUS procedure in daily gastroenterology practice is increasing even it is still debatable in most cases due to the outstanding development of imaging modalities. Some controversial issues also have been mentioned in the literature on EUS procedure regarding the aspiration needle in obtaining adequate sample and the need of contrast-enhanced EUS.^{24,25}

EUS images examples based on our case series.¹⁸

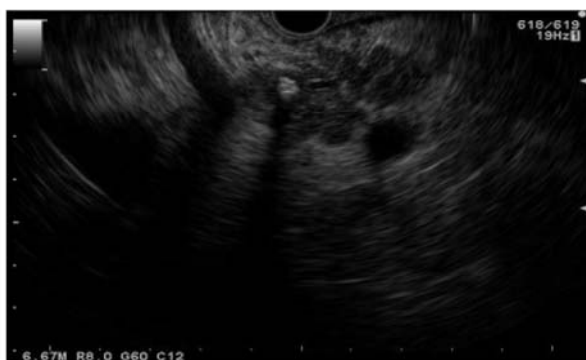


Figure 1. EUS image showing pancreatic stone in parenchyma



Figure 2. EUS image showing a stone inside undilated CBD



Figure 3. EUS image showing FNA in pancreatic head mass

CONCLUSION

At the end, it doesn't matter which modality approach is the best, however it should be back to our clinical judgment as a gastroenterologist to decide which approach might be better to our patients. It should also be thought reversely whether the approach modality is really indicated with regards to the cost-effectiveness.

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