The Role of ERCP and EUS in Acute Pancreatitis

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Introduction

Acute pancreatitis (AP) is a common disease of the gastrointestinal tract. It has various clinical manifestations and can cause sepsis and multi-organ failure. Most AP cases are mild, self-limiting disease. However, about 30% of patients have a severe form of disease, necrotizing pancreatitis, associated with significant complication and mortality. If the underlying etiology remains uncorrected, AP can worsen and turn into recurrent pancreatitis and chronic pancreatitis. Therefore, the cause of AP should be corrected and serious complications can affect to adjacent or distant organ must be treated. In these aspects, endoscopic retrograde cholangiopancreatography (ERCP) and endoscopic ultrasonography (EUS) have been evolved for the diagnosis and treatment of AP and its complications. Herein we will discuss the role of ERCP and EUS for diagnosis and treatment of AP and its complications.

Diagnosis and Treatment of Acute Pancreatitis

Small (< 3 mm) and radiolucent gallstones are usually undetected by abdominal ultrasound or CT scan. These small gallstones are common cause of unexplained and recurrent acute pancreatitis associated with poor prognosis. Using EUS, physicians can obtain high-resolution image to detect small gallstones. A number of studies have compared the accuracy of EUS to US, CT, and MRI/MRCP for detecting common bile duct stones. In most reports, the sensitivity of EUS ranged from 88-97% with a specificity of 96-100%. ERCP have a treatment role in patients with AP and concurrent acute cholangitis. Early ERCP within 24 h of admission decreases morbidity and mortality in patients with AP complicated by biliary sepsis. Detection and removal of small gallstones via EUS and ERCP can improve patients’ outcome.

Contrast-enhanced EUS (CE-EUS) is also useful in AP. It can help to identify and delineate necrotic areas of pancreas. CE-EUS enables early detection of necrosis in AP and the differential diagnosis of pseudocyst and neoplasia. Differential diagnosis of autoimmune pancreatitis and mass-forming pancreatitis are also available under CE-EUS.
Treatment of Local Complications of Acute Pancreatitis

According to revised Atlanta classification, local complications of AP are classified into peripancreatic fluid collections, pancreatic and peripancreatic necrosis (sterile or infected), pseudocyst and walled-off necrosis (sterile or infected) (Table 1). These local complications require treatment when they cause pain, obstruction, bleeding or infection. With recent technological advances, endoscopic drainage is widely accepted and has replaced surgery as the first line therapy for local complications of AP.

1. Peripancreatic Fluid Collection

EUS guided-endoscopic transmural drainage of peripancreatic fluid collection (PFC) with plastic or metal stent has become a widely accepted treatment modality. EUS guidance allows access to non-bulging lesions, avoidance of major vascular structures and accurate assessment of PFC contents. Studies have reported technical success rates for EUS-guided fluid collection drainage of 84 to 94 percent.

In recent years, novel metal stents are developed to overcome limitations of plastic stents with small caliber. Fully covered self-expanding metal stent (FCSEMs) and specially designed lumen-apposing metal stents (LAMSs) are these. They provide larger caliber that allow for longer patency, reduce rates of occlusion and decrease the probability of secondary infections. EUS guided metal stent drainage will be more safe and effective modality in the future.

2. Walled-off Necrosis - Endoscopic Necrosectomy

According to accumulation of endoscopic PFC drainage experience, endoscopic treatment has been extended to endoscopic necrosectomy. After pancreatic duct assessment using ERCP and transmural stent insertion with EUS guidance, necrotic tissue within the cavity is removed by a combination of several accessories, balloons, snares, and baskets. The endoscope also can be inserted across the gastric or duodenal wall and into the necrotic cavity. Success rate of endoscopic necrosectomy is reported 68 to 91% and bleeding, perforation and air embolism are known complications. Technical advancement and newly developed metal stents may improve the success rate and reduce complications of necrosectomy.
Conclusions

In the treatment of acute pancreatitis, the role of ERCP and EUS are rapidly increasing. They can replace traditional method or invasive surgery. AP patients treated with these methods will achieve favorable outcome.

References