Utility of endoscopic ultrasound in Hepato-Pancreatico-Biliary (HPB) diseases

Suresh Vasan Venkatachalapathy, Andrew Baxter, Guruprasad P Aithal*

Email: guru.aithal@nottingham.ac.uk

Abstract

Endoscopic Ultrasound (EUS) has been used to diagnose benign and malignant Hepato-Pancreato-Biliary (HPB) conditions for over 20 years. EUS allows close access to pancreas, gall bladder, left lobe of the liver and bile duct. In particular, it is possible to sample these and other retroperitoneal tissue safely. With the introduction of novel fork-tip and Franssen type cutting needles, the diagnostic yield has improved significantly to greater than 95%. Hence, it has become the investigation of choice for pancreatic pathology. Contrast Enhanced EUS (CE-EUS) may help differentiating malignant tumours from slow growing tumours such as neuroendocrine tumours and inflammatory lesions. In addition, linear EUS has been used in a wide range of therapeutic procedures such as drainage of pancreatic fluid collections, gall bladder empyema, biliary drainage, treatment of pancreato-biliary tumours and coeliac plexus block/neurolysis for pain control. In this review, we will review the diagnostic and therapeutic use of EUS in HPB conditions.

Key words: Endoscopic ultrasound, therapeutic EUS, tissue acquisition with EUS

Introduction

Intraluminal ultrasound was first used in 1956 for the diagnosis of rectal cancer and in 1976, with an ultrasound probe down the accessory channel of a therapeutic gastroscope, for investigation of a pancreatic lesion. 1,2 Development in endoscopic ultrasound (EUS) was rapid and was initially used as a diagnostic modality for identifying benign and malignant gastrointestinal (GI) condition. The invention of linear echoendoscope facilitated the endo-sonographer to acquire tissue from the lesions. The EUS probes have either radial arrays (radial) or curvy linear arrays (linear). Radial echoendoscopes lack an accessory channel and their use is limited to imaging, whereas the linear endoscopes have a channel positioned, so that instruments advance in the same plane as the ultrasound image, allowing visualization of the area of interest and the instrument simultaneously and therefore opening up therapeutic interventions. There is no significant difference in imaging accuracy between either array.3 Radial arrays are more commonly used in staging of luminal lesions and linear arrays are more commonly used to acquire tissue for histology and for therapeutic interventions.

Contrast enhanced EUS (CE-EUS) was first reported in 1997.4 Intra-arterial CO₂ microbubbles and later with the advent of power doppler sonography and increasingly high frequency probes, venous infusion with novel contrast agents (Sonoview) has been used as adjuncts in the diagnosis of cystic and malignant lesions in pancreas. 5

EUS has become an important tool and often aid in the therapeutic management of various Hepatico-Pancreato-Biliary conditions (HPB). The recent advances in the accessories have facilitated improvements in the therapeutic role of EUS. The advantages of EUS over other modalities are it provides safe GI access as opposed to percutaneous