Editorial

The role of Endoscopic Ultrasound (EUS) in the management of patients with pancreatic cancer: now bigger than ever

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In this issue of the *Journal of Gastrointestinal Oncology* De Angelis *et al.* provide a comprehensive review of the role of endoscopic ultrasound (EUS) in the management of pancreatic cancer. At present the two main established roles of EUS are imaging and tissue acquisition. In addition some EUS-guided therapieshave gained limited but expanding role in pancreatic cancer patients.

As correctly pointed by the authors, the role of standard EUS imaging for diagnosis and staging has decreased with the advent of dynamic contrast enhanced multi-detector row computed tomography (MDCT). Nevertheless, contrary to the prevailing perceptions both EUS and MDCT are operator dependent and significant variability of image quality and interpretations exist with MDCT. Furthermore, EUS remains superior imaging modality to detect small pancreatic lesions, mural nodules within a cyst, small lymph nodes and coexisting biliary pathology. We concur with the authors that inmost patients EUS and MDCT should be considered complimentary rather than competing imaging modalities for the evaluation of patients with suspected pancreatic lesions with MDCT been the initial test in most patients. Anotable exception is the screening of populations at high risk for pancreatic cancer where the recent International Cancer of the Pancreas Screening (CAPS) Consortium summit endorsed EUS as the initial test of choice (1,2). EUS is also preferably used for serial surveillance of premalignant pancreatic lesions [e.g., Intraductal papillary mucinous neoplasm (IPMN)] without the radiation exposure associated with MDCT (3). The addition of contrast-enhanced EUS and elastography may expand the utility of EUS imaging for solid pancreatic masses but their role is yet to be determined (4,5). Furthermore, early data on EUS-guided needle based confocal laser endomicroscopy (nCLE) have shown promising results in the evaluation of pancreatic cysts (6,7).

On the contrary, EUS with fine needle aspiration (EUS-FNA) has refused to share the scene with other sampling modalities and has become the preferred method for tissue acquisition in patients with pancreatic lesions. EUS may not be necessary in all pancreatic cancer cases but pretreatment pathological diagnosis is essential in most patients with both resectable and advanced disease. Recently the role of EUS sampling has expanded further with the introduction of a new needle with core trap that can provide histologic samples also refereed as fine needle biopsy (EUS-FNB) (8). This is an exciting development because EUS-FNB can facilitate accurate tissue diagnosis in situations where FNA cytology has been known to be inadequate (e.g., autoimmune pancreatitis, lymphoma) but also can provide assessment for tumor vascular and lymphatic invasion. Furthermore, in the forceable future treatment decisions and patient prognosis most likely will be based on molecular markers and EUS appears to be the ideal tool to gather adequate tissue for analysis (9).

EUS has also has expanded its role in selected patients with pancreatic cancer as a valuable therapeutic tool. At present, EUS-guided fiducial placement is now routinely done to facilitate image guided radiation therapy (10), EUS-guided celiac plexus neurolysis can greatly facilitate the management of pancreatic cancer pain (11), and EUS-guided biliary drainage is a viable alternative to percutaneous drainage in patient that had failed endoscopic retrograde cholangiopancreatography (ERCP) or in patients with altered gastric anatomy (12). Importantly, in the future EUS most likely will play an important role in delivering novel local antitumor therapy. Ethanol ablation for selected small mucinous cyst has shown promising results and EUS fine needle injection (EUS-FNI) of various viral and biologic therapies has undergone preliminary evaluation (13).

In conclusion, despitestiff competition from other

imaging modalities standard EUS imaging remains a valuable tool. Contrast-enhanced EUS, EUS elastography and needle based confocal endomicroscopy may further expand the utility of EUS imaging but their exact role is yet to be determined. EUS-FNA is currently the preferred modality for tissue acquisition in patients with pancreatic lesions and the advent of FNB may further solidify this essential role. The therapeutic role of EUS has expanded and ranges from primary in the case of fiducial deployment to fall back strategy in the case of EUS-guided biliary drainage. In the forceable future, EUS-FNI most likely will play a central role for delivery of novel targeted antitumor medications but for now its role is limited to palliative celiac plexus neurolysis.

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