



ESGE

EUROPEAN SOCIETY OF GASTROINTESTINAL ENDOSCOPY

GUIDELINES

Endoscopic Ultrasonography Part II

Retroperitoneum and Large Bowel, Training

In cooperation with the European Endosonography Club

Working party : G. Caletti (Italy), J. Deviere (Belgium), P. Fockens (Netherlands), W.R. Lees (UK), B. Mortensen (Denmark), S. Odegaard (Norway), T. Rösch (Germany), J.C. Souquet (France), P. Vilmann (Denmark).

Pancreatic Cancer

Using endoscopic ultrasonography (EUS), even small pancreatic tumors can be delineated. EUS has been shown to be superior to ultrasonography (US) and computed tomography (CT) and be equal to endoscopic retrograde cholangiopancreatography (ERCP) in the diagnosis of small pancreatic cancers. At present, EUS should not be used as a screening procedure to detect early pancreatic cancer outside study protocols, and its accuracy in an unselected population with a low incidence of pancreatic disease is not known. EUS is not able to reliably differentiate between benign and malignant pancreatic masses. Its role in the local staging of pancreatic cancer is to determine the T and the N stages, as well as to assess portal venous involvement. Its accuracy in diagnosing portal vein involvement varies from 70-90 % in the literature with more results being less encouraging; criteria for diagnosing vascular involvement still have to be developed and evaluated. EUS is probably less reliable in diagnosing arterial involvement and infiltration into the superior mesenteric vein. EUS has been shown to be superior to other procedures, such as US and CT, and in selected cases has been found to be superior to angiography in the local staging of pancreatic cancer. Tumors that are too large to be fully visualized by EUS, which only has a limited penetration depth, are probably better staged by CT.

Recommendations : Use of EUS in the primary diagnosis of pancreatic cancer, complementary to ERCP in cases in which US and CT are negative or inconclusive. At present, EUS cannot be used to improve the early detection of pancreatic cancer, and it is not reliable in differentiating benign from malignant pancreatic masses. It should be used for the local staging of potentially resectable pancreatic cancers, together with other procedures such as US, CT, angiography, and laparoscopy. The relative value of EUS in comparison to other modern tests (spiral or angio-CT, magnetic resonance imaging), and the best sequence of tests, including EUS, for evaluating resectability, are not yet known.

Pancreatic Endocrine Tumors.

EUS has repeatedly been shown to be more accurate than any other imaging procedure in the preoperative localization of pancreatic endocrine tumors; even if US and CT are negative,

EUS will diagnose about 80 % of lesions located in the pancreas. For intraduodenal gastrinomas, EUS localization is probably less reliable, and this is true of all preoperative imaging methods. EUS should be used when the diagnosis of an endocrine tumor of potential pancreatic origin has already been established on the basis of clinical signs and symptoms and specific laboratory tests.

Recommendations : Use of EUS in the preoperative localization of endocrine tumors of potential pancreatic origin; EUS is less sensitive in localizing intraduodenal gastrinomas, and should probably be used in combination with somatostatin-receptor scintigraphy.

Chronic Pancreatitis

EUS can demonstrate the parenchymal and ductal features of chronic pancreatitis, and has been shown to be highly accurate in diagnosing moderate to severe chronic pancreatitis, although prospective comparisons with other procedures such as US and Ct are not yet available. There is no consensus about the ability of EUS to diagnose early chronic pancreatitis : EUS cannot delineate side-branch changes, but it does show discrete parenchymal abnormalities in these patients, sometimes even in the absence of ERCP changes. In the absence of a reliable gold standard, it cannot as yet be decided whether EUS is more sensitive than ERCP, or how often EUS procedures false positive results in normal cases.

Although larger pancreatic pseudocysts, which are clinically relevant, can be well diagnosed by US and CT, EUS can be used to delineate the relation of the pseudocysts to the gastrointestinal wall when internal endoscopy drainage is considered; the influence on management is not known. The technique of EUS-guided pseudocyst drainage is still experimental, and requires further technical development of the instruments and devices. It has yet to be determined whether the EUS features of cysts (wall thickness, internal structure) correlate with their tendency toward spontaneous resolution.

Recommendations : Use of EUS to diagnose chronic pancreatitis if ERCP is not feasible; there is no risk of procedure-related acute pancreatitis with EUS. The sensitivity and specificity of EUS in diagnosing early chronic pancreatitis have to be further evaluated.

Tumors of the Papilla of Vater

Although there are as yet insufficient data, EUS is probably less reliable in differentiating benign from malignant stenoses of the papilla when endoscopy and biopsy are negative or inconclusive. EUS should not be used to differentiate between adenoma and localized carcinoma in cases of negative endoscopic biopsy. However, EUS has been shown to be accurate in determining the tumor infiltration depth and in diagnosing lymph-node metastases in cancer of the papilla. EUS has not yet been compared to the information obtained by ERCP plus CT with regard to the resectability of carcinoma of the papilla, and the clinical that EUS may have on the planning of therapy is therefore not fully evident yet. EUS might have more impact when different resection techniques are applied, depending on the tumor infiltration depth (local excision for T1 cancer versus Whipple procedure for more advanced tumors).

Recommendations : Use of EUS in the preoperative staging provides more accurate delineation of local tumor spread. The clinical implications are at present not entirely clear.

Biliary Tumors

Few data are available, but these suggest that EUS can play only a limited role in differentiating malignant from inflammatory bile duct stenoses. The same seems to apply to the use of intraductal ultrasonic probes. With regard to the staging of distal common bile duct cancers, the same applies here as for pancreatic head carcinoma, and studies show that EUS is accurate. Proximal bile duct tumors (Klatskin tumors) are more difficult to stage, since the penetration depth of EUS may not be sufficient to reach the right hepatic duct system and its surroundings. there are no studies available comparing EUS, intraductal scanning (with

US miniprbes), cholangiography, cholangioscopy, and CT in the staging of proximal bile duct cancer, so that the value of EUS in this respect is not known. Japanese studies suggest a very high accuracy rate of ultrasonic miniprbes in the local staging of proximal bile duct cancers, but this has to be confirmed in further prospective studies.

Recommendations : Use of EUS in preoperative staging (see pancreatic and papillary cancer) in distal bile duct tumors. Use of EUS in proximal cancers should be further evaluated.

Gallstones

Increasing numbers of studies have shown that EUS is very sensitive and specific in the diagnosis of common bile duct stones. In contrast to ERCP, there is no facility for treatments such as sphincterotomy and removal, either. The application of EUS in patients with varying levels of clinical suspicion has yet to be assessed. EU can be used in selected patients for the diagnosis of cholecystolithiasis when conventional EUS has failed for different reasons (e.g. morbid obesity), and when there is a clinical suspicion of small gallstones or sludge.

Recommendations : EUS seems to be highly accurate in the diagnosis of choledocholithiasis: its clinical role has yet to be evaluated. In selected patients with negative or inconclusive US for gallbladder stones, EUS appears to be accurate, but further studies are awaited.

Colorectal Carcinoma

EUS using rigid probes has been applied for the staging of rectal cancer, and numerous studies have shown a high accuracy in the TN staging of the tumors, EUS being superior to CT. EUS has a clinical impact, since different therapeutic approaches are used depending on the local tumor extent (e.g., local resection in T1, radical extirpation in T2-T3, pre-treatment in T4). EUS seems to be highly sensitive, but is probably less specific in detecting anastomotic recurrence. The evaluation of the response to radiotherapy is hampered by inflammatory and fibrous wall changes mimicking residual cancer, so that the staging accuracy of EUS in pre-treated cases of rectal cancer is reduced.

EUS using a flexible forward-viewing instrument (echo colonoscope) has been used in the local staging of suprarectal colonic carcinoma, and has been shown to provide accurate T staging information but to be less reliable in the N staging. More distant lymph-node metastases along the mesenteric vessels are present of minor importance, unless different treatment approaches similar to those in rectal cancer (local excision via minimally invasive surgery, etc.) develop.

Recommendations : Use of rectal EUS in the preoperative staging of rectal cancer, which has an impact on treatment decisions. The value of EUS in restaging after radiotherapy seems to be limited, and its role in the detection of anastomotic recurrence is at present unclear. The use of colonic EUS in the preoperative staging of colon cancer is at present only of minor clinical significance, but this could change with the use of laparoscopic surgery.

Colorectal Adenoma

EUS is not reliable in differentiating between adenoma and T1 carcinoma, but it can assess the integrity of the muscularis propria with a 90 % accuracy, thus distinguishing between adenoma or T1 carcinoma and T2-T4 cancer. This may have an impact in the future, when the adenoma/T1 group is treated locally (e.g., by minimally invasive surgery), while the T2-T4 group has to undergo conventional radical surgery. The precise role of EUS in the pretherapeutic workup of patients with biopsy-negative large sessile colonic adenomas has not yet been fully elucidated.

Recommendations : use of EUS in colonic adenomas only within controlled trials ; EUS could play an important role in the future with the increasing application of minimally invasive surgery.

Inflammatory Bowel Disease

EUS has been shown to delineate wall changes in inflammatory bowel disease, and a staging system has been proposed. EUS has also been shown to differentiate reliably between mucosal and transmural inflammation, but this needs confirmation in further studies. It is unlikely that EUS will play a role in the surveillance of patients with long-standing ulcerative colitis. Several studies have shown that EUS is superior to other procedures, such as CT, in detecting paracolorectal inflammatory pathology such as fistulas and abscesses. The influence of these EUS findings on the clinical management (in comparison to evaluation using other procedures) has not been examined yet.

Recommendations : Use of EUS in the diagnosis of pararectal abscesses and fistulas complementary to endoscopy (and possibly CT). Its precise role in this setting is however not yet entirely clear.

Anal EUS and incontinence

Several papers have suggested that EUS can play a role in the diagnosis of sphincter defects in addition to other tests, such as sphincter manometry. The interpretation of EUS images of the anal canal requires considerable experience. There have been few studies examining the impact of EUS on therapy, but they show a higher accuracy in selecting patients for surgery.

Recommendations : Anal EUS in the workup of faecal incontinence seems to be a valuable addition to other diagnostic tests.

Training Aspects

Experience and training in abdominal ultrasonography and upper gastrointestinal endoscopy with side-viewing instruments is necessary prior to the performance of EUS. Training should include textbooks, atlases, videotapes, teaching courses - possibly with hands-on training - and visits to one of the expert units. It is difficult to assess how many procedures are then required in order to achieve sufficient skill and expertise, since this is dependent on many variables.

The ESGE strongly encourages further clinical research, preferably in joint projects, to further evaluate EUS and to elucidate its potential impact on the management of patients with gastroenterological disease. It is equally important to establish training facilities for colleagues interested in starting with EUS.