Endoscopic Evaluation in the Workup of Pancreatic Cancer

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KEYWORDS

- Pancreatic ductal adenocarcinoma (PDAC) • Endoscopic ultrasound (EUS)
- Fine-needle aspiration (FNA)
- Endoscopic retrograde cholangiopancreatography (ERCP)

KEY POINTS

- Endoscopic ultrasound (EUS) imaging is the most sensitive diagnostic modality for pancreatic cancer, especially for tumors smaller than 2 cm in size.
- EUS also allows simultaneous fine-needle aspiration for cytologic diagnosis of the malignant process.
- Endoscopic retrograde cholangiopancreatography (ERCP) brushings and biopsies have low sensitivity (but high specificity) for pancreatic cancers and should not be used primarily for diagnosis owing to high risk of complications.
- Endoscopic biliary drainage via ERCP is the first-line palliative modality for malignant biliary obstruction.
- Both computed tomography and EUS play a complementary role in staging and preoperative planning; data to indicate superiority of one over the other is lacking.

INTRODUCTION

Pancreatic cancer is a relatively rare disease and ranks 12th in terms of prevalence among cancers in the United States, but it is the fourth leading cause of cancer related deaths.[1] It is projected to become the second leading cause of cancer related mortality by 2020.[2] The overall 5-year survival for pancreatic cancer is very low at 7.2%. It is around 27% for localized disease, but 2.4% for metastatic disease. Despite multiple advances in imaging technologies, less than 10% of the cancers are diagnosed at a localized stage.[1] Much emphasis is being placed on early diagnosis of this deadly disease at a stage when curative surgical resection is possible. Owing to the low sensitivity of cross-sectional imaging to detect small tumors in the pancreas, endoscopic

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Surg Clin N Am 96 (2016) 1257–1270
http://dx.doi.org/10.1016/j.suc.2016.07.006
surgical.theclinics.com

diagnosis by using endoscopic ultrasound (EUS) has become a mainstay for diagnosis of pancreatic cancer. EUS also provides additional benefit of tissue sampling for histologic diagnosis. In this article, we review the clinical presentation of pancreatic cancer and the modalities available for diagnosis with special emphasis on the use of EUS and endoscopic retrograde cholangiopancreatography (ERCP).

CLINICAL PRESENTATION

Clinical presentation in patients with pancreatic adenocarcinoma is variable and depends on the location and stage of the disease. Owing to improving resolution and more frequent use of imaging, more patients are being diagnosed with smaller tumors that are discovered incidentally on scans done for unrelated reasons. Patients with symptomatic cancer can present with obstructive jaundice, abdominal pain, weight loss, acute pancreatitis, new-onset diabetes, worsening of long-standing diabetes, or paraneoplastic symptoms usually related to coagulopathy. Pancreatic head tumors usually present early with obstructive jaundice, but the diagnosis of pancreatic body and tail cancers is often delayed because these do not produce early symptoms and are commonly recognized when symptoms are produced by a nonlocalized disease process. Physical examination findings may include muscle wasting, jaundice, lymphadenopathy, and hepatomegaly. Many patients with pancreatic cancer have a normal physical examination on initial presentation. The laboratory characteristics include elevated bilirubin and alkaline phosphatase in patients with biliary obstruction. CA 19-9 is the only available serum biomarker for pancreatic cancer, but is limited by its low sensitivity and specificity.[3] It is often used to monitor the progression or recurrence of disease after surgery and/or neoadjuvant therapy.[4] The use of CA 19-9 for diagnostic purposes is not recommended.

DIAGNOSTIC MODALITIES

The diagnosis of pancreatic cancer usually involves cross-sectional imaging and endoscopy in the appropriate clinical setting. Surgical exploration for diagnosis is rarely needed with modern imaging and endoscopy. We briefly review imaging modalities for the diagnosis of pancreatic cancer (reviewed in detail elsewhere in this issue) and then focus on the role of endoscopy for diagnosis, with particular focus on EUS.

TRANSABDOMINAL ULTRASOUND IMAGING

Transabdominal ultrasound imaging is the most commonly used study in patients with jaundice and right upper quadrant pain owing to its low cost, easy availability, and lack of any radiation exposure. It has very high sensitivity in detecting biliary dilatation and also the level of obstruction, but in addition to being user dependent it has a very low sensitivity for actual detection of pancreatic masses.[5,6] In patients with suspected pancreatic malignancy, computed tomography (CT) scanning is the most commonly used initial study and the usefulness of abdominal ultrasound imaging in these patients is very limited.

CROSS-SECTIONAL IMAGING: COMPUTED TOMOGRAPHY AND MRI

CT is the most commonly used initial imaging modality in patients with suspected pancreatic malignancy. With the advent of multidetector CT (MDCT) imaging, the sensitivity of CT for diagnosing pancreatic cancer is reported to be greater than 80%.[7] However, the sensitivity of MDCT for diagnosing small pancreatic tumors (<20 mm in size) is still relatively low (around 50%).[8,9] With availability of EUS-guided