GE Port J Gastroenterol. 2015;22(4):161–171

Portuguese Journal of Gastroenterology

www.elsevier.pt/ge

REVIEW ARTICLE

Endoscopic Ultrasound in the Diagnosis and Staging of Pancreatic Cancer

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Received 17 March 2015; accepted 23 April 2015
Available online 2 July 2015

KEYWORDS
Biopsy, Fine-Needle;
Endosonography;
Neoplasm Staging;
Pancreatic Neoplasms

Abstract Pancreatic cancer is one of the digestive cancers with the poorest prognosis, so an early and correct diagnosis is of utmost importance. With the development of new therapeutic options an accurate staging is essential. Endoscopic ultrasonography (EUS) has a major role in all stages of the management of these patients.

EUS has a high accuracy in the diagnosis of pancreatic adenocarcinoma and the possibility to perform fine-needle aspiration/biopsy (FNA/FNB) increases the diagnostic yield of EUS. There is still no consensus on the several technical aspects of FNA, namely on the rapid on-site evaluation (ROSE), the diameter and type of needle, the number of passes and the use of stylet and suction. Contrast-enhanced EUS (CE-EUS) and EUS elastography (EUS-E) have been used in recent years as an adjunct to EUS-FNA. Given the higher sensitivity of these techniques a negative cytology by EUS-FNA should not exclude malignancy when CE-EUS and/or EUS-E are suggestive of pancreatic neoplasia. EUS remains one of the main methods in the staging of pancreatic adenocarcinoma, namely to further evaluate patients with non-metastatic disease that appears resectable on initial imaging.

EUS is crucial for an accurate preoperative evaluation of pancreatic cancer which is essential to choose the correct management strategy. The possibility to obtain samples from suspicious lesions or lymph nodes, by means of EUS-guided fine-needle aspiration as well as the use of contrast-enhanced and elastography, makes EUS an ideal modality for the diagnosis and staging of pancreatic cancer.

PALAVRAS-CHAVE
Biópsia por Agulha Fina;

A Ecoendoscopia no Diagnóstico e Estadiamento do Cancro do Pâncreas

Resumo O adenocarcinoma do pâncreas é uma das neoplasias digestivas com pior prognóstico, sendo fundamental um diagnóstico correto e precoce. Com o desenvolvimento de novas

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http://dx.doi.org/10.1016/j.jpge.2015.04.007

Estadiamento de Neoplasias;
Ecoendoscopia;
Neoplasias Pancreáticas

opções terapêuticas é essencial um estadiamento preciso. A ecoendoscopia apresenta um papel relevante em todas as fases da abordagem destes doentes.

A acuidade da ecoendoscopia no diagnóstico de adenocarcinoma pancreático é elevada. A possibilidade de realização de punção aspirativa aumenta o potencial diagnóstico, não havendo ainda consenso relativamente a vários aspetos da técnica, nomeadamente em relação à presença de citopatologista durante o procedimento, tipo e diâmetro de agulha, número de passagens e utilização estilete e aspiração. Nos anos recentes tem-se assistido à utilização de ecoendoscopia com contraste (CE-EUS) ou elastografia (EUS-E) como adjuvante da ecoendoscopia. Estas técnicas apresentam elevada sensibilidade e uma citologia negativa não exclui malignidade se a CE-EUS e/ou EUS-E apresentarem características sugestivas de malignidade. A ecoendoscopia mantém-se um dos principais métodos no estadiamento do adenocarcinoma pancreático, em especial na presença de doença não metastática que aparenta ser ressecável noutras técnicas imagiológicas.

A ecoendoscopia é fundamental na avaliação pré-operatória do adenocarcinoma pancreático e na definição da correta estratégia de tratamento. A possibilidade de obtenção de amostras de lesões ou adenopatias suspeitas, através de punção aspirativa, assim como a utilização de contraste e elastografia, fazem da ecoendoscopia uma técnica ideal no diagnóstico e estadiamento.

1. Introduction

Pancreatic neoplasia, particularly exocrine pancreatic cancer, is a common cause of cancer-related death and is second only to colorectal cancer as a cause of digestive cancer-related death.[1] Due to its aggressive behavior and late presentation, this disease has a poor prognosis with a very low five-year survival rate. Surgical resection offers the only potential cure, but only 10–15% of patients are candidates for pancreatectomy. Because of these reasons it is of utmost importance to do an early and correct diagnosis as well as the most precise staging before providing therapeutic options.

This paper will discuss the role of endoscopic ultrasound in the diagnosis and staging of pancreatic cancer.

2. How good is EUS guided FNA in the diagnosis of solid pancreatic lesions?

EUS-FNA is technically successful in 90–95% of procedures, with high sensitivity and specificity for malignancy. This is confirmed by a recent meta-analysis that showed sensitivity of 85% and specificity of 98%.[2] When patients with atypical or suspicious cytology were reclassified as positive for malignancy, the sensitivity increased to 91%, with a slight decrease in specificity. The negative predictive value of 64% reflects the important fact, that a negative result of EUS-FNA does not exclude malignancy with absolute certainty.

In spite of this excellent accuracy, there is some discussion if all pancreatic lesions should be sampled, particularly in patients who are good surgical candidates with lesions that appear resectable. This is mainly due to the fact that EUS-FNA can be hampered by the presence of stenosis or other anatomical factors; its accuracy appears to be diminished in the background of chronic pancreatitis[3] and there is some concern with needle tract seeding, even if this last aspect has only been anecdotally reported.[4] On the other hand, performing EUS-FNA to all patients may be advantageous since it allows ruling out other types of malignancy,[5] assists with surgical planning and confirms the diagnosis in patients who want verification prior to surgery.

3. ROSE, needle, suction and passes

Several methodological features can contribute to the success of EUS guided FNA/FNB. These include the rapid on-site evaluation (ROSE), the type of needle, the number of passes and the use of stylet and suction.

The role of ROSE and its relevance in EUS-FNA has been described in a guideline published by the European Society of Gastrointestinal Endoscopy.[4] Its use is considered controversial even if a recent meta-analysis[6] and various studies have shown an improvement in adequacy rate.[7,8] This is mainly due to the fact that ROSE only seems to improve the adequacy rate when it is below 90% and many recent studies have reported adequacy rates superior to 90% without the use of ROSE, indicating that, in high-volume centers, ROSE may not be indispensable. A valid alternative to the presence of a cytopathologist is the preparation of slides by a cytotechnician. This was retrospectively evaluated by Alsohaibani et al and the final diagnosis was higher in the group with on-site cytotechnologists preparing the slides (77% vs. 53%) and providing initial consideration about specimen adequacy.[8]

Unfortunately not all EUS-FNA performing units have access to ROSE. In such cases it is of utmost importance