Original Paper

Pancreatology

Pancreatology 2011;11:390–398
DOI: 10.1159/000330536

Received: May 9, 2011
Accepted after revision: July 5, 2011
Published online: August 30, 2011

Role of Endoscopic Ultrasound and Endoscopic Ultrasound-Guided Fine-Needle Aspiration in Diagnosing Metastasis to the Pancreas: A Tertiary Center Experience

S. Hijioka[c] K. Matsuo[g] N. Mizuno[c] K. Hara[c] M.A. Mekky[a] B. Vikram[b] W. Hosoda[d] Y. Yatabe[d] Y. Shimizu[e] S. Kondo[f] M. Tajika[f] Y. Niwa[f] K. Tamada[h] K. Yamao[c]

[a]Department of Tropical Medicine and Gastroenterology, Assiut University Hospital, Assiut, Egypt; [b]Department of Medical Hepatology, Institute of Liver and Biliary Sciences (ILBS), Delhi, India; Departments of [c]Gastroenterology, [d]Pathology and Molecular Diagnostics, [e]Surgery and [f]Endoscopy, Aichi Cancer Center Hospital, and [g]Division of Epidemiology and Prevention, Aichi Cancer Center Research Institute, Nagoya, and [h]Department of Gastroenterology, Jichi Medical University, Tochigi, Japan

Key Words
Metastasis to pancreas · Endoscopic ultrasound · Endoscopic ultrasound-guided fine-needle aspiration

Abstract
Background: Metastasis to the pancreas (MP) is a rare entity that is difficult to identify by imaging alone. Few reports have described endoscopic ultrasound (EUS) and EUS-guided fine-needle aspiration (FNA) findings. Herein, we try to describe the EUS and EUS-FNA characteristics of MP. ***Methods:*** This retrospective study compared 28 patients with MP (13 males; mean age: 60.1 ± 12.6 years) and 60 control patients (30 males; 62.7 ± 11.5 years) with pancreatic ductal adenocarcinoma (PDAC). All lesions were characterized by EUS, and MP was diagnosed by EUS-FNA (n = 16), surgery (n = 6) or both (n = 6). ***Results:*** Multivariate logistic regression revealed that the presence of regular borders (p = 0.004; OR: 8.81, 95% CI: 1.97–39.4), the absence of retention cysts (p = 0.045; OR: 12.5, 95% CI: 1.06–147.0), and the absence of main pancreatic duct (MPD) dilation (p = 0.003; OR: 8.18, 95% CI: 2.04–32.8) were predictors of MP rather than PDAC. The EUS-FNA sampling adequacy was 95.4% (21/22), and the correct diagnosis was obtained in 95.2% (20/21) of cases when K-ras mutation analysis and/or immunostaining were added. ***Conclusion:*** The presence of regular borders, the absence of retention cysts and the presence of nondilated MPD on EUS indicate MP rather than PDAC. This diagnosis can be accurately confirmed by EUS-FNA with immunostaining and/or K-ras analysis.

Introduction

Although most solid pancreatic masses are pancreatic ductal adenocarcinomas (PDAC), several differential diagnoses should be suspected, including pancreatic neuroendocrine tumors (PNET), focal chronic pancreatitis and, rarely, metastatic lesions in the pancreas (MP) [1–3]. Reports on the characteristics that can be used to differentiate MP from PDAC based on endoscopic ultrasound (EUS) findings alone are scarce [1, 3]. EUS-fine-needle aspiration (EUS-FNA) is the most accurate method of tissue sampling from pancreatic lesions, including patients with negative yields on previous endoscopic retrograde

KARGER

Fax +41 61 306 12 34
E-Mail karger@karger.ch
www.karger.com

1424–3903/11/0114–0390$38.00/0

Accessible online at:
www.karger.com/pan

Susumu Hijioka, MD
Department of Gastroenterology, Aichi Cancer Center Hospital
1-1 Kanokoden, Chikusa-ku
Nagoya 464-8681 (Japan)
Tel. +81 52 762 6111, E-Mail rizasusu@isis.ocn.ne.jp

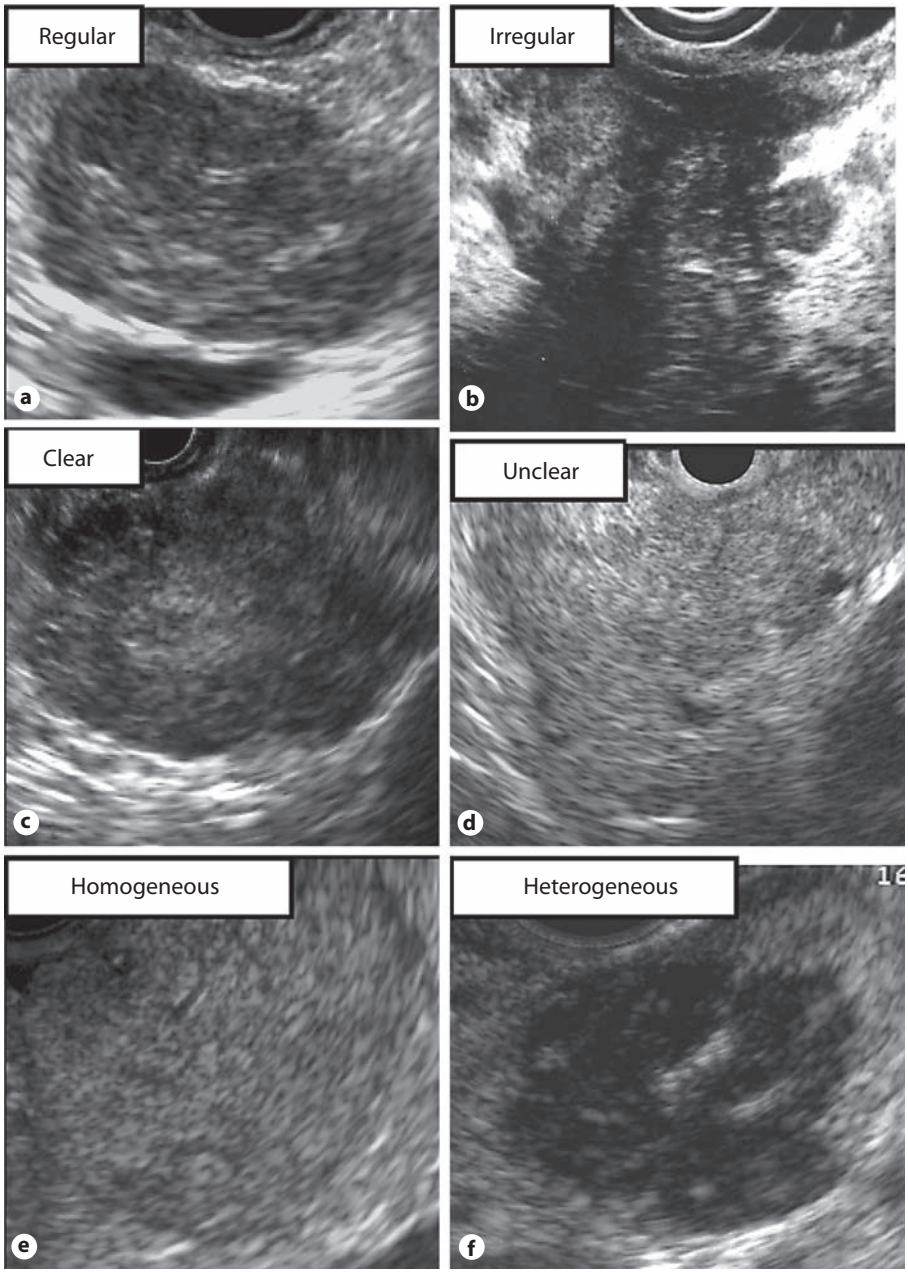

Fig. 1. Representative tumor characteristics: regular tumor border (leiomyosarcoma; **a**), irregular tumor border (colon cancer; **b**), clear tumor boundary (malignant melanoma; **c**), unclear tumor boundary (esophageal cancer; **d**), homogeneous internal echo (renal cell carcinoma; **e**) and heterogeneous internal echo (malignant lymphoma; **f**).

cholangiopancreatography [4–6]. The accurate diagnosis of an isolated MP is important for the proper selection of management that is likely to result in long-term survival [7–9] and might also avoid unnecessary aggressive surgery. However, only a few reports have described EUS-imaging features and the feasibility of EUS-FNA of MP lesions [1, 3]. The aims of this single-center retrospective study were to compare the EUS features of MP with PDAC and to describe the performance of EUS-FNA in sampling such lesions.

Methods

Patients

This retrospective study included one group with MP (n = 28) and a control group with PDAC (n = 60). Patients with MP were included when the presence of metastatic lesion(s) in the pancreas had been confirmed by histology and when there was no direct pancreatic invasion from peripancreatic lymph nodes. These patients were identified from our database of 10,500 EUS studies conducted at the Aichi Cancer Center Hospital, Nagoya, Japan, between March 1997 and August 2010. The control group included 60 consecutive patients with PDAC (8 patients who had under-