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The Value of Endoscopic Ultrasound in a 47-Year-Old Man with Cystic Lesions of the Liver and Pancreas

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Key Words

Neuroendocrine tumors · Pancreatic cancer · Pancreatic cystic lesions · Islet cell tumor · Endoscopic ultrasound

Abstract

Most neuroendocrine tumors (NETs), like other tumors, are clinically silent, producing symptoms only as a consequence of tumor growth. Pancreatic NETs account for only 1% of pancreatic cancers by incidence, while representing 10% of all pancreatic cancers by 28-year limited duration prevalence. Here, we present a 47-year-old man with abdominal pain, icterus, itching and 8 kg weight loss during 5 months. Elevated liver enzymes, direct bilirubin and alkaline phosphatase were observed. Magnetic resonance cholangiopancreatography showed a prominence at the head of the pancreas and also liver cysts. Endoscopic ultrasound of the pancreas was performed and a specimen was obtained via fine needle aspiration. Immunohistochemical staining was performed and the result was compatible with NET. The patient referred to receive chemotherapy.

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Introduction

Neuroendocrine tumors (NETs) are a group of malignant tumors that are believed to originate from neuroendocrine cells found throughout the body. Most NETs, like other tumors, are clinically silent, producing symptoms only as a consequence of tumor growth [1]. Pancreatic NETs (PNETs) can originate within the pancreas or from similar neuroendocrine cells outside of the pancreas [2], and only 1–2% of clinically significant pancreas neoplasms are PNETs. About 15–30% of PNETs are nonsecretory or nonfunctional, which

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means that they either do not secrete or that the quantity or type of products do not cause a clinical syndrome [3]. We present the case of a man with icterus, itching and 8 kg weight loss within 5 months. Magnetic resonance cholangiopancreatography (MRCP) showed a prominence at the head of the pancreas and also liver cysts. Endoscopic ultrasound (EUS) of the pancreas was performed and a specimen was obtained via fine needle aspiration (FNA). Immunohistochemical staining was performed and the result was compatible with NET.

Case Report

The patient was a 47-year-old man who presented with icterus, itching and 8 kg weight loss during 5 months. He had been in good health until 5 months earlier, when he felt abdominal pain and itching. Except for icteric conjunctiva, his physical examination was unremarkable. His biochemical study revealed a cholestatic pattern with elevated tumor markers (table 1). There was no evidence of hepatitis B or C virus infection, primary biliary cirrhosis or autoimmune hepatitis, and he did not have a history of excessive alcohol consumption, smoking or any medication. Upper and lower gastrointestinal endoscopy revealed no abnormality. Computed tomography (CT) revealed numerous hypoattenuated masses in different size with sharp border without any wall or content enhancement in the liver and a few cysts in the pancreatic head (fig. 1, fig. 2, fig. 3). MRCP showed intra- and extrabiliary duct dilation and also dilation of the pancreatic duct (double duct sign), a prominence at the head of the pancreas and liver cysts (fig. 4, fig. 5). According to these findings, endoscopic retrograde cholangiopancreatography was performed and a plastic stent (5 cm, 5 F) was inserted into the pancreatic duct and another plastic stent (10 cm, 10 F) was placed in the common bile duct (fig. 6). EUS of the pancreas was performed and a specimen was obtained via FNA and sent to pathology (fig. 7).

Pathologic study of the specimen showed some cellular clusters containing atypical cells having large nuclei with coarse chromatin, suggestive of malignancy. Thus, immunohistochemical staining was performed and the result was compatible with NET: LCA: negative; CK7: negative; CK20: negative; CEA: negative; cytokeratin: positive; chromogranin: positive; synaptophysin: positive; NSE: positive; Ki67: negative. According to the immunohistochemical results, the diagnosis of NET was confirmed, and regarding the bulk of the tumor and liver metastasis, we referred the patient to begin chemotherapy.

Discussion

PNETs account for only 1–2% of pancreatic cancers by incidence, while representing 10% of all pancreatic cancers by 28-year limited duration prevalence. NETs are divided into low-grade (G1), intermediate-grade (G2) and high-grade (G3) groups. Low-grade NETs are typically slow to develop, intermediate-grade NETs have a less predictable, moderately aggressive course, and high-grade NETs are extremely aggressive [1].

The annual incidence of clinically significant NETs is approximately 2.5–5 per 100,000 [4]. PNETs can originate within the pancreas or from similar neuroendocrine cells outside the pancreas [2]; only 1–2% of clinically significant pancreas neoplasms are PNETs. Well- or intermediately-differentiated PNETs are sometimes called islet cell tumors. Neuroendocrine cancer is more aggressive. About 70–85% of PNETs are functional, secreting hormones that cause symptoms. About 15–30% of PNETs are nonsecretory or nonfunctional, which means that they either do not secrete or that the quantity or type of products do not cause a clinical

syndrome [3]. Our patient presented with a cholestatic pattern, without symptoms of secretory hormones.

Chromogranin A appears to be the most useful serum marker for diagnosis, staging and monitoring [5]. CT scans, magnetic resonance imaging, sonography (ultrasonography) and gastrointestinal endoscopy (including EUS) are common diagnostic tools. Octreoscan, also called somatostatin receptor scintigraphy, utilizes intravenously administered octreotide to detect larger lesions with tumor cells that are avid for octreotide [6]. Standard positron emission tomography scans using fluorodeoxyglucose are not useful in the diagnosis of NETs [7]. Preoperative staging of disease extent is necessary to determine the likelihood of complete resection, though debulking surgery is often felt to be useful in unresectable patients. Once metastatic, biotherapy is usually the first modality employed because it is generally well tolerated. Systemic or regional therapies are generally reserved until symptoms occur or tumor growth is rapid [5].

In conclusion, PNETs are not common neoplasm, but should be considered among patients presenting with a cholestatic pattern. Early diagnosis of this neoplasm makes complete resection possible.

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Table 1. Serum values of biochemical study

	Serum values	Reference range
Aspartate aminotransferase, IU/l	64	6–40
Alanine aminotransferase, IU/l	83	7–40
Alkaline phosphatase, IU/l	830	30–120
Total bilirubin, mg/dl	7.8	0.2–0.8
Direct bilirubin, mg/dl	6.1	0.1–0.4
Carbohydrate antigen 19-9, U/ml	98	0–37
Cancer antigen 125, U/ml	32	0–35
Alpha-fetoprotein, µg/l	11	0–40

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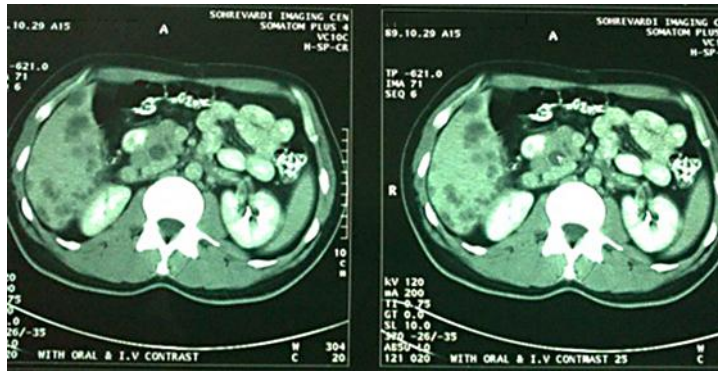


Fig. 1. CT of the abdomen revealed numerous hypodense masses in different size with sharp border without any wall or content enhancement in the liver and a few cysts in the pancreatic head.

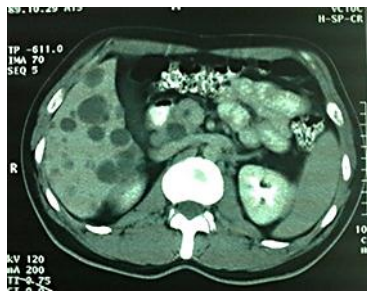


Fig. 2. CT of the abdomen revealed numerous hypodense masses in different size with sharp border without any wall or content enhancement in the liver and a few cysts in the pancreatic head.

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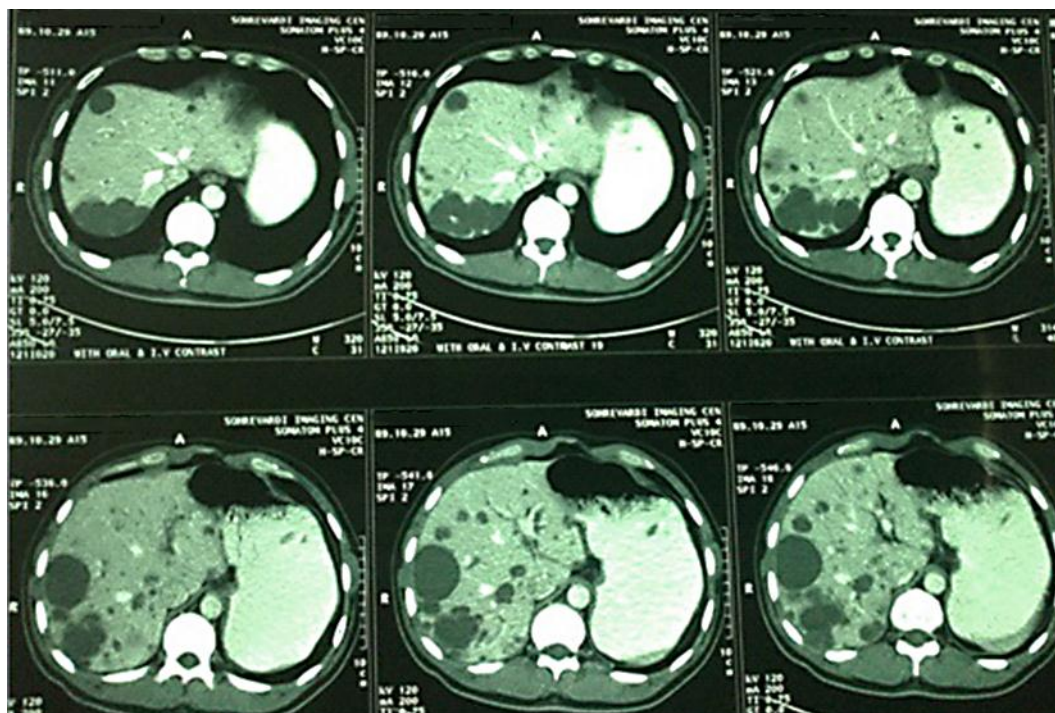


Fig. 3. CT of the abdomen revealed numerous hypoattenuated masses in different size with sharp border without any wall or content enhancement in the liver and a few cysts in the pancreatic head.

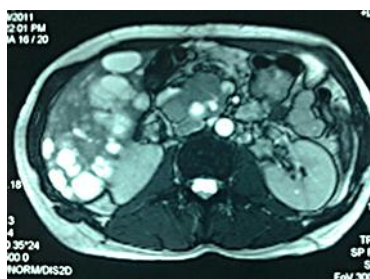


Fig. 4. MRCP of the abdomen showed intra- and extrabiliary duct dilation and also dilation of the pancreatic duct (double duct sign), a prominence at the head of the pancreas and liver cysts.



Fig. 5. MRCP of the abdomen showed intra- and extrabiliary duct dilation and also dilation of the pancreatic duct (double duct sign), a prominence at the head of the pancreas and liver cysts.

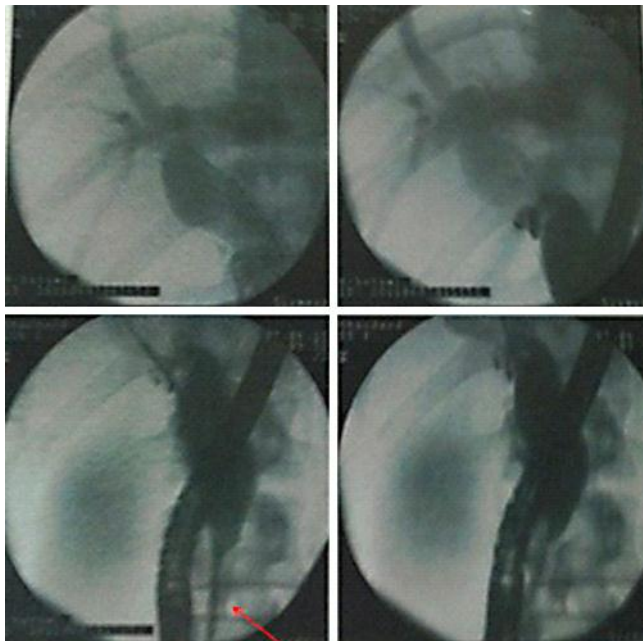


Fig. 6. Endoscopic retrograde cholangiopancreatography showed common bile duct dilation and plastic biliary stent insertion.

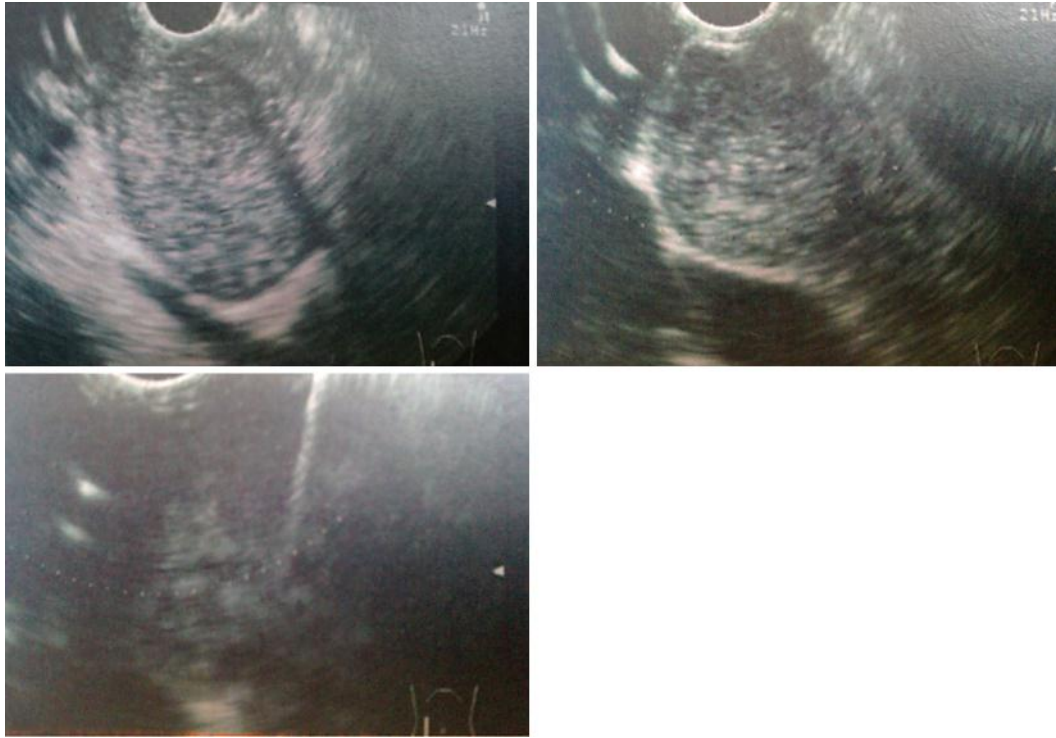


Fig. 7. EUS and EUS/FNA of the pancreatic lesion. A specimen was obtained via FNA.