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A Case of Minute Intraductal Papillary Mucinous Tumor of the Pancreas Presenting with Recurrent Acute Pancreatitis

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Abstract

Intraductal papillary mucinous tumor (IPMT) of the pancreas, a lesion consisting of mucin-producing cells with neoplastic potential, is characterized by duct ectasia, mucin hypersecretion, often extensive papillary intraductal growth, varying degrees of cytologic atypia, and relatively indolent growth. The clinical presentation of IPMT of the pancreas is characterized by chronic or recurrent attacks of abdominal discomfort often in association with low level pancreatic enzyme elevations. Less commonly these lesions may be detected as asymptomatic radiographic abnormalities. Interestingly, a case of a minute IPMT (2 mm in height and 7 mm in length, adenoma) in the main pancreatic duct presenting with acute pancreatitis in a 55 year-old man has been reported in the Japanese literature. Recently, we also experienced a case of a minute IPMT in a branch pancreatic duct causing repeated bouts of acute pancreatitis in a 75 year-old man. A filling defect at the neck of the main pancreatic duct seen on an endoscopic retrograde pancreatogram performed after recovery of the second attack of acute pancreatitis led the patient to undergo an exploratory laparotomy. After a near-total pancreatectomy was carried out, a minute (3×7 mm) IPMT of borderline malignancy was discovered in a branch duct at the head portion near the pancreatic neck without any lesions in the main pancreatic duct. Surprisingly, despite the resective surgery the patient died of carcinomatosis 8.5 months after the operation. We herein report a case of a minute but aggressive IPMT of the pancreas with a review of the literature.

Key Words: Intraductal papillary mucinous tumor, IPMT, minute, acute pancreatitis

INTRODUCTION

Intraductal papillary mucinous tumor (IPMT) of the pancreas is a lesion consisting of mucin-producing cells with neoplastic potential.[1] This unique group of tumors is characterized by duct ectasia, mucin hypersecretion, often extensive papillary intraductal growth, varying degrees of cytologic atypia, and relatively indolent growth.[2-5] Currently IPMT of the pancreas also includes intraductal papillary neoplasms that do not hypersecrete mucin.[3,5]

The clinical presentation of IPMT of the pancreas is characterized by chronic or recurrent attacks of abdominal discomfort often in association with low level pancreatic enzyme elevations.[1] Less commonly these lesions may be detected as asymptomatic radiographic abnormalities.[1,6] The episodes of pancreatitis due to IPMT of the pancreas are mild in severity and systemic or local complications attributable to pancreatitis have not been reported.[1] The tumors were reported to range from a few millimeters in size to panductal.[2,3] However, details as to how a few millimeter tumors presented or were detected are unavailable. Presumably, those small lesions should have caused a dilation of the main and/or branch pancreatic ducts due to mucin hypersecretion. Interestingly, a case of a minute IPMT (2 mm in height and 7 mm in length, adenoma) in the main pancreatic duct presenting with acute pancreatitis in a 55 year-old man was reported in the Japanese literature.[7]

Recently, we also experienced a case of a minute IPMT in a branch pancreatic duct causing repeated bouts of acute pancreatitis by mucin secretion into the main pancreatic duct in a 75 year-old man. We herein report a case of a minute IPMT of the pancreas with a review of the literature.

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CASE REPORT

A 75 year-old man was admitted to the hospital on March 3rd, 1998 because of a 2-day history of severe epigastric pain. On admission, serum amylase was 2,090 U/L, and serum lipase 4,360 U/L. An abdominal CT scan on admisson revealed a peripancreatic fat infiltration that was consistent with a diagnosis of acute pancreatitis. Neither a ductal dilation nor were cystic lesions found at this time. The patient recovered uneventfully with conservative management and was discharged on the 19th hospital day. About 20 days later (April 10th, 1998), a 3-hour history of severe epigastric pain developed and he was re-admitted. He had had operations for the left eye cataract in 1993 and for the right eye cataract in 1995. Otherwise his past medical history was unremarkable and he also denied smoking and consuming alcohol.

On his 2nd admission, he complained of a fever and chill, but denied nausea, vomiting, dyspnea, cough, sputum, steatorrhea, or weight loss. He appeared acutely ill, but his vital signs were unremarkable except for the body temperature of 37.9°C. The examinations of the lungs and heart were normal. The abdomen was flat but rigid and tender without rebound tenderness. No mass or organomegaly was palpated. The bowel sound was decreased.

Laboratory findings included a hemoglobin concentration of 10.3 g/dL, leukocyte count of 7,600/mm^3, and platelet count of 201,000/mm^3. The serum calcium was 8.2 mg/dL, inorganic phosphorus 2.8 mg/dL, glucose 105 mg/dL, blood urea nitrogen 13 mg/dL, creatinine 1.1 mg/dL, uric acid 3.5 mg/dL, total cholesterol 166 mg/dL, total protein 6.8 g/dL, albumin 3.9 g/dL, total bilirubin 1.1 mg/dL, alkaline phophatase 109 U/L, AST 16 IU/L, ALT 9 IU/L, triglyceride 118 mg/dL, amylase 2,090 U/L, and lipase 4,360 IU/L. CA19-9 was 12.0 U/ml.

An abdominal CT scan performed on the day of his 2nd admission showed peripancreatic fluid collection and a mildly dilated main pancreatic duct at the body and tail of the pancreas (Fig. 1). The patient recovered with conservative treatment. An endoscopic retrograde cholangiopancreatogram (ERCP) was performed on the 12th hospital day and it revealed a lumen-bulging filling defect at the neck of the main pancreatic duct and mild dilation of the upstream pancreatic duct (Fig. 2). An endoscopic ultrasound showed only mild ductal dilatation and inhomogenous pancreatic parenchyma without any evidence of mass shadows.

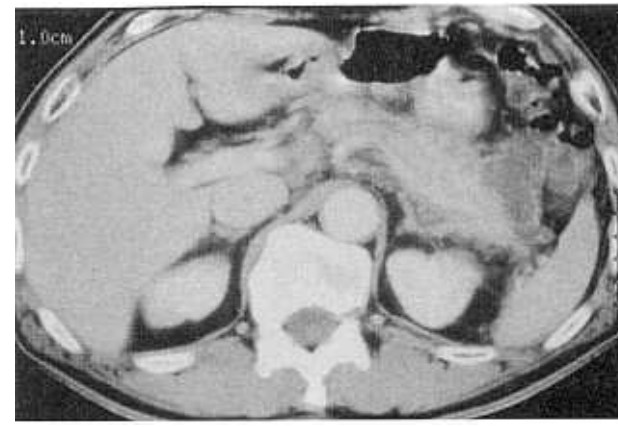

Fig. 1. An abdominal computed tomography on the second admission. The main pancreatic duct is slightly dilated and peripancreatic infiltration and fluid collections are seen.

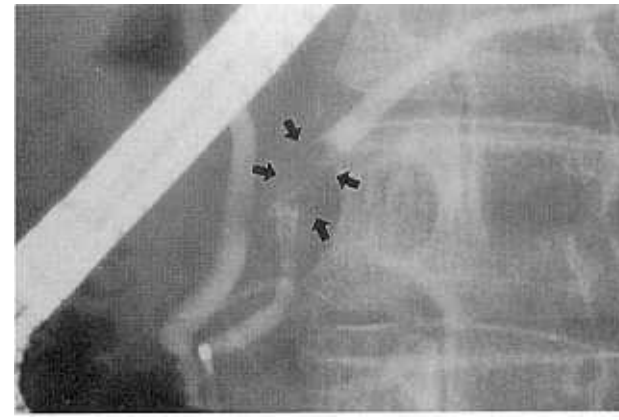

Fig. 2. An endoscopic retrograde cholangiopancreatography performed after recovery from the second attack of acute pancreatitis. An approximately 13 mm long filling defect is seen at the neck of the main pancreatic duct (arrows). This filling defect causes bulging of the main pancreatic duct and mild dilatation of the upstream.

An exploratory laparotomy was carried out on the 19th hospital day and showed that the pancreas and peripancreatic tissues were hard in consistency, necrotic, and partly infected. Consequently, a distal pancreatectomy rather than a pancreaticoduodenectomy was performed. Since the resected specimen of the pancreas did not include any masses, the resection was extended toward the head of the pancreas and as a result a near-total pancreatectomy was performed. A small tumor nodule was discovered in the

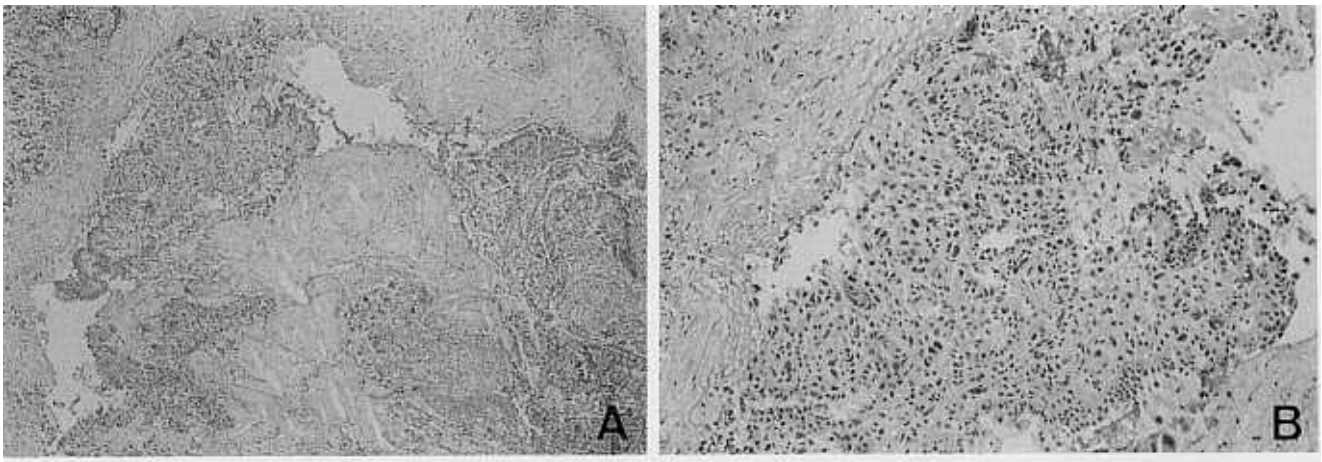

Fig. 3. Microscopic findings of the resected specimen. A. Papillary epithelial proliferation is found in a branch duct (H&E, ×40). B. The tumor consists of mucin-containing cuboidal cells with papillary proliferation and high grade cellular atypia, but without invasive growth pattern. Intraductal papillary mucinous tumor, borderline malignancy was diagnosed (H&E, ×100).

pancreatic parenchyma just beside the main pancreatic duct. However, no mass was detected in the main pancreatic duct. The remainder of the resected pancreas and the resection margins were negative for dysplasia or malignancy.

A microscopic examination of the resected specimen showed a papillary epithelial proliferation in a branch duct (Fig. 3A). The tumor consisted of mucin-containing cuboidal cells with papillary proliferation and high grade cellular atypia, but without an invasive growth pattern (Fig. 3B). As a result, IPMT, borderline malignancy was diagnosed.

Postoperatively, the patient developed an enterocutaenous fistula, which resulted in prolonged hospitalization. Seven months later, a re-exploration was performed due to development of symptoms and signs of intestinal obstruction. The peritoneal cavity was severely adhesed and multiple nodules were found on the parietal peritoneum, omentum, and mesentery. An incisional biopsy of a nodule gave a diagnosis of metastatic adenocarcinoma. The patient died of carcinomatosis 8.5 months after the first operation.

DISCUSSION

The present case is intriguing in that a tumor of a few millimeters in a branch pancreatic duct caused repeated attacks of acute pancreatitis in approximately a one month period probably by secreting mucins into the main pancreatic duct. Furthermore, it was rapidly progressive and fatal.

Lesions of IPMT of the pancreas less than 1 cm in size have been described in case reviews from two major centers in the United States.[2,3] However, it is unknown how those small tumors were specifically presented or detected. Nonetheless, it may be understood in the context of their descriptions that presentations of those small tumors were not different from the majority of cases.

The typical presentation of IPMT of the pancreas is chronic or recurrent attacks of abdominal discomfort often in association with low level pancreatic enzyme elevations mimicking chronic or relapsing pancreatitis.[1] A history of pancreatitis is noted in a large proportion of the patients.[1-3,5,8] Serum pancreatic enzyme elevations may correlate with pain episodes, are typically only low level in magnitude, may be on an intermittent or consistent basis, and may be isolated to amylase or lipase.[1] The episodes of pancreatitis due to IPMT of the pancreas are mild in severity and systemic or local complications attributable to pancreatitis have not been reported.[1] Thus, it seems quite unusual that an IPMT of the pancreas manifests as acute pancreatitis with the full-blown pictures as shown in our own case. Moreover, any characteristic imaging or endoscopic features of IPMTs were not present in our case. Thus we were unable to diagnose IPMT preoperatively at all.

The first attack of acute pancreatitis of the present case was considered idiopathic and thus no further

diagnostic work-ups were carried out. The patient developed a more severe attack of acute pancreatitis about 40 days after the first attack and the slightly dilated main pancreatic duct was first noted only on a follow-up abdominal CT scan. An ERCP was performed after recovery from pancreatitis and revealed a filling defect in the main pancreatic duct at the neck. This filling defect was finally thought to be a mucin plug which must have been secreted from a branch duct IPMT.

It is agreed that further diagnostic work-up is not recommended after the first attack of idiopathic acute pancreatitis because the chance of recurrence is low.[9] However, it is recommended to search for an obstructing cause in elderly patients with unexplained acute pancreatitis.[9] Could we have found a lesion if an ERCP had been done after the first attack in this patient? We are not sure about this. An interesting case report describes a young man whose initial ERCP after the first attack of acute pancreatitis had been normal at 26 years of age, but who developed typical features of IPMT of the pancreas 9 years later.[10] Hence the initial acute pancreatitis attack in this patient was presumed to be caused by intraductal mucus.[10] The initial abdominal CT scan of our patient did not reveal any evidence of pancreatic ducal dilatation. Since the filling defect seen on ERCP proved to be a mucin plug, it might not have been present during the first admission. By contrast, the lesion of the case of Nakamura et al.[7] was small but located in the main pancreatic duct. Therefore, it could not be missed by an ERCP. They confirmed the lesion preoperatively by using a per-oral pancreatoscopy and intraductal ultrasonography.[7]

Although the importance of IPMTs of the pancreas relates to their favorable prognosis and low potential for malignancy,[1] a clear distinction from typical ductal adenocarcinomas, the present case died of carcinomatosis 8.5 months after a pancreatic resection in spite of the pathologic diagnosis of a borderline malignancy. The development of the metastatic disease in our patient suggests that some neoplastic foci were left in the remaining pancreas despite the negative margins at the time of pancreatic resection. Other examples of aggressive IPMTs of the pancreas have been reported by Kaye et al.[10] and So et al.[11] The former regards a 35-year-old man where a widespread peritoneal carcinomatosis was noted 1 year after a pylorus-preserving pancreaticoduodenectomy.[10] The latter concerns a 71-year-old man who was diagnosed as having IPMT of the pancreas on the basis of typical imaging and endoscopic features.[11] This patient refused surgery, and developed malignant ascites and liver metastasis only 3 months later.[11] These examples of aggressive IPMTs warrant further investigation to determine the exact extent of the lesions preoperatively and/or intraoperatively and identify a high risk group of patients who will suffer recurrence after resection.

In summary, a case of a minute branch duct IPMT that caused recurrent acute pancreatitis and was rapidly progressive and fatal was presented. Unexplained acute pancreatitis especially in elderly patients warrants further diagnostic work-up such as ERCP. Further research into methods to determine the exact extent of the lesions preoperatively and/or intraoperatively and identify a high risk group of patients who will suffer recurrence is warranted.

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