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Successful Endoscopic Treatment of Accessory Pancreatic Duct Stones in an Elderly Patient with Igg-4 Related Disease: A Case Report and Literature Reviews

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I. Introduction

Pancreatic duct stone is defined as stone or calcification in pancreatic duct [1-2]. In 1667, De Graof firstly reported pancreatic stone disease. With the advancement of radiological techniques in diagnosis and in-depth study, the incidence of pancreatic duct stone appears to be rising in recent years, mainly in Europe and the United States. Currently, the definite pathogenesis of pancreatic duct stone disease remains to be unknown. Several factors contribute to the stone formation or calcification in the pancreatic duct, including chronic pancreatitis, pancreatic duct fibrosis, malnutrition, alcohol abuse, spontaneous pancreatic duct stone, hypothyroid, etc [3-7] .

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Pancreatic duct stone is difficult to diagnose in its early stage due to the absence of specific symptoms. However, with the enlargement of the stone, the patient appears abdominal pain or other discomforts. These symptoms need to be diagnosed and treated. Treatments effectively used including surgical, endoscopic techniques, laser lithotripsy, and extracorporeal shock wave lithotripsy (ESWL), balloon stenting, and medications [8]. The success of endoscopic intervention as a less invasive procedure in the treatment of pancreatic stones is partly due to the improvement of endoscopic techniques. However, pancreatic duct stones approximately 5 mm or greater are often not amenable to conventional management with sphincterotomy, stricture dilation, or stone retrieval with basket balloon catheter dilation [9].

This is one of the first reported cases of successful removal of such a big accessory pancreatic duct stone under ERCP in an elderly patient with an acute pancreatitis attack. Another interesting finding is that, the patient meets the diagnostic criteria of IgG-4 related disease, and the diffused pancreatic calculi might be associated with IgG4-related diseases involving pancreas. The patient lived a novel life since the minor invasive operation, although three years later he had diarrhea associated with the chronic pancreatitis.

Case report

a) General information of the patient

A 92 year old male patient was admitted to our department for continuous pain in the left upper abdomen for 27 hours on July 31th, 2009. He took yogurt and cakes for supper on July 29, 2009, and developed a sudden abdominal pain at 22:00 pm on the same day. The pain concentrated in left upper abdominal with an intermittent radiation to the left quarter rib area. His temperature began to rise as high as 38.2 centigrade at 18:50 pm on July 30, 2009. He had no symptoms of nausea, vomiting, cough, expectoration, diarrhea, or urinary frequency, urgency, and urodynia. He also had no history of influenza exposure, tuberculosis or hepatitis. He also denied a history of hypertension, coronary heart disease,

diabetes and hyperlipidemia. He had no habits of drinking and smoking. However, he had a history of appendectomy 10 years age.

b) Blood Examinations

Blood samples were collected from the patients. Blood routine examination showed that: white cell count was 13.03×109/L(normal range:3.5~10×109/L), Neutrophil ratio was 0.885 (normal range: 0.500~0.700); Emergent biochemistry result showed that: C-reaction protein (CRP) was 10.72mg/dl (normal range: 0-0.8mg/dl); serum amylase was 215.5U/L (28-150 U/L), serum lipase was 1138.3U/L (13- 60 U/L). Serum concentration of IgG was 2930mg/dl (normal range: 700-1600mg/dl) and the serum concentration of subtype of IgG was listed in the table.1.

c) Image study of pancreas

When the patient came to our department, abdominal CT showed swelling pancreas with the extended pancreatic duct, and calcification image could be observed in duodenal papilla (Fig1a). After the calculi (dimension:1.0×0.8cm) in the accessory pancreatic duct was removed by sphincterotomy under ERCP, abdominal CT showed there no longer calculi in the duodenal papilla (Fig.1b). Three years later, abdominal CT, MRI, MRCP showed that pancreas atrophy with mild extended pancreatic duct.

Ultrasound images of glands and superficial lymph Nodes

Fig.1a

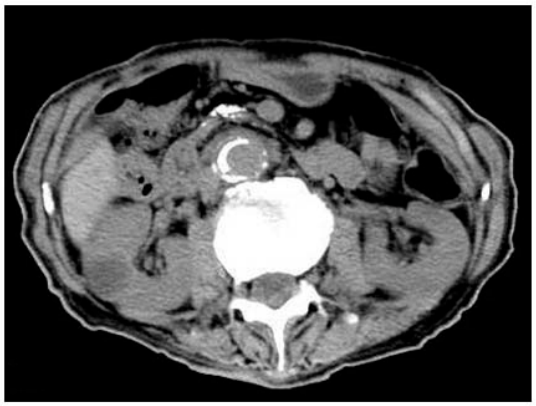

Fig.1b

Ultrasound images showed that thyroid gland, parotid gland, and submandibular gland were enlargement as listed in Fig.2a-2c

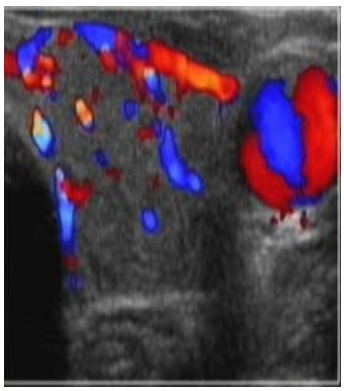

Fig.2a

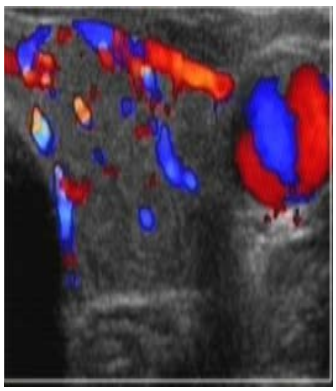

Fig.2b

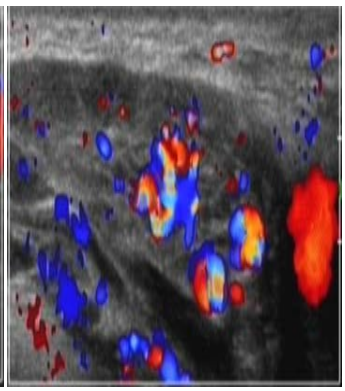

Fig.2c

II. Treatments

a) Conservative Therapy

The clinical symptoms, lab examinations, and images suggested a definite acute pancreatitis. The treatment including fasting and decompression, inhibition of pancreatic secretion, drugs of trypsin inhibitors, nutrition support and antibiotics were administered to him. But the treatments above can't alleviate the symptoms completely.

b) Multidisciplinary Consultation

An expert group including hepatic and pancreatic surgery, endoscopic physician, digestive physician, cardiology physician, respiratory physician, and anesthesiology doctors evaluated the current status

of the patient. All the experts agreed that the diagnosis of this patient was definite, and the symptoms of the acute pancreatitis might not be ameliorated if the obstruction of the pancreatic duct was still on. ERCP should be done immediately.

c) Endoscopic Technique

Since the conservative therapy can't relieve the symptom of abdominal pain, he underwent ERCP after a multidisciplinary consultation. Yet, the catheter can't be inserted into the major pancreatic duct due to the hyperemia of duodenal papilla, although endoscopic sphincterotomy was used. Fortunately, we observed that minor papilla of the duodenal was even more hyperemia which suggested that the presence of the stones. Then the minor duct was cannulated with a standard sphincterotome, and a sphincterotomy was performed which resulted in successful extraction of the pancreatic stone(1.0×0.8cm). (Figure.3)

d) Complication and Outcome

There were no complications during the operation, and his abdominal pain was relieved after the procedure. The patient was followed for 38 months with no evident discomforts.

III. Discussion

To our knowledge, this is the first paper to report the successful removal of a big stone of 1.0×0.8cm in the accessory pancreatic duct removed by sphincterotomy under ERCP in such an elderly patient. Furthermore, no abdominal pain or any symptom of acute pancreatitis has been caused again during the follow up for more than 3 years. Another interesting finding is the patient had an IgG-4 related disease involved in multiple glands, including the pancreas.

The IgG4-related disease represents a systemic disease characterized by extensive IgG4-positive plasma cells and T-lymphocyte infiltration of various organs. Clinical manifestations are apparent in organs such as the pancreas, bile duct, gall bladder, salivary glands, retroperitoneum, kidney, lung, and prostate gland, where tissuefibrosis with obliterative phlebitis is pathologically induced. In some cases, only one or two organs are clinically involved, whereas others show effects on three or four organs [10-13]. This patient had a high level of serum IgG4, and characteristic diffuse swelling in multiple organs and superficial lymph nodes, suggested that he suffered from IgG4-related diseases. From the CT or MRI scanning for the pancreas, we can see the atrophy of the pancreas, extension of the pancreas duct, along with multiple calcifications in the pancreas. So we suspected that the chronic pancreatitis is associated with IgG4-related disease. Later, he had the symptom of the diarrhea, and the effectiveness of the pancreatic enzyme treatment of diarrhea confirmed our assumption.

Based on the chronic pancreatitis, he was hospitalized with acute pancreatitis. According to the result from lab examination and imagining scanning, we suspected that symptom of the acute pancreatitis might be caused by the obstruction of pancreatic duct due to the stone. Considering the factors of his advanced age and other potential risks, ERCP detection was undergone and fortunately, a stone located in the accessory pancreatic duct was found and removed successfully. Since then, the patient continues to live a normal life after the operation.

In conclusion, this paper is first case where a big stone located in the accessory pancreatic duct was removed successfully using sphincterotomy under ERCP in an elderly patient with no complications. Long time of clinical remission indicated that minor invasive operation of sphincterotomy under ERCP was suitable for the elderly patient with pancreatic duct stone.

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Table 1 : Serum concentration of subtype of IgG4

Subtype of IgG	Concentration (mg/dl)	Normal Range (mg/dl)
IgG1	1300	490~1140
IgG2	882	150~640
IgG3	126	11~85
IgG4	2300	3.0~200