

Pancreatic Lithiasis: Two Case Reports

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1. Abstract

Lithiasis of Wirsung's duct is a rare affection, often seen in chronic pancreatitis, but also in other conditions such as alcoholism, pancreatic duct fibrosis, malnutrition, dysthyroidism or it may be idiopathic. A multitude of complementary examinations can be performed for diagnosis including abdominal ultrasound, CT, Cholangiopancreatography Magnetic Resonance (CP-MR) and Endoscopic Retrograde Cholangiopancreatography (ERCP), allowing an accurate lesion mapping in order to guide the endoscopic or surgical therapeutic management.

We report two cases diagnosed with pancreatic lithiasis.

2. Introduction

Pancreatic main duct lithiasis occurs significantly in patients with chronic pancreatitis, at a frequency of 50-90% [1]. Epigastric pain is the most frequent symptom. The diagnosis can be made by abdominal ultrasound, endoscopic ultrasound, endoscopic retrograde cholangiopancreatography (ERCP), magnetic resonance cholangiopancreatography (MRCP), CT scan and MRI. The therapeutic management includes a symptomatic component based on analgesics, and a curative component including endoscopic and surgical techniques [2].

3. Case Reports

3.1. Case 1

A 38-year-old female patient with no medical history, presented to the emergency department with severe epigastralgiaradiating to the back evolving for one week associated with vomiting, without other digestive disorder. On examination, the patient presented an epigastric tenderness. The rest of the clinical examination was without abnormalities.

Blood investigations revealed a normal serum lipase of 134 I.U. The patient was hospitalized in a general surgery department. Symptomatic treatment with analgesics was started. An abdominal ultrasound was performed showing an isolated dilatation of the Wirsung. A cholangiopancreatography MRI was performed revealing a generalized atrophy of the pancreatic parenchyma with dilatation of the main pancreatic duct upstream of an intraductal lithiasis in the cephalic portion of the Wirsung, without infiltration of the peri-pancreatic fat (Figure 1). An endoscopic retrograde cholangiopancreatography was performed with fragmentation and extraction of the lithiasis, with a good clinical evolution and a disappearance of the epigastric pain.

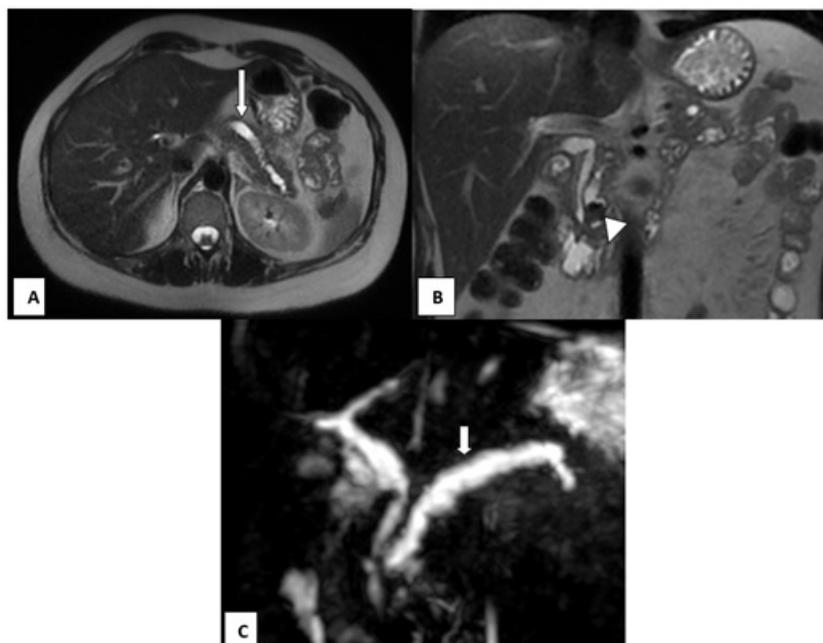


Figure 1: Pancreatic-MRI on T2 weighted sequence with axial (A) and coronal (B) sections and 3D MRCP (C) showing a pancreatic atrophy (Arrow) with dilatation of the Wirsung (Short arrow) upstream of a calculi in the cephalic portion (Arrowhead).

3.2. Case 2

A 56-year-old female patient with a previous history of recurrent attacks of upper abdominal pain, presented to the emergency department for worsening of a chronic epigastric pain evolving for 4 months associated with nausea and vomiting. The clinical examination was without abnormalities.

Laboratory data showed a discrete inflammatory syndrome with high range of white blood cell (11000 / μ L) and a C-reactive protein value

of 67 mg/L and a normal serum lipase of 120 I.U. An analgesic treatment was initiated. A cholangiopancreatography MRI was performed showing features of chronic calcific pancreatitis with a significant generalized atrophy of the pancreatic parenchyma, non-uniform dilatation of the main pancreatic duct upstream of an intraductal lithiasis and individualization of areas of signal void suitable with intraparenchymal calcifications (Figure 2). An endoscopic retrograde cholangiopancreatography was performed for the extraction of the calculi.

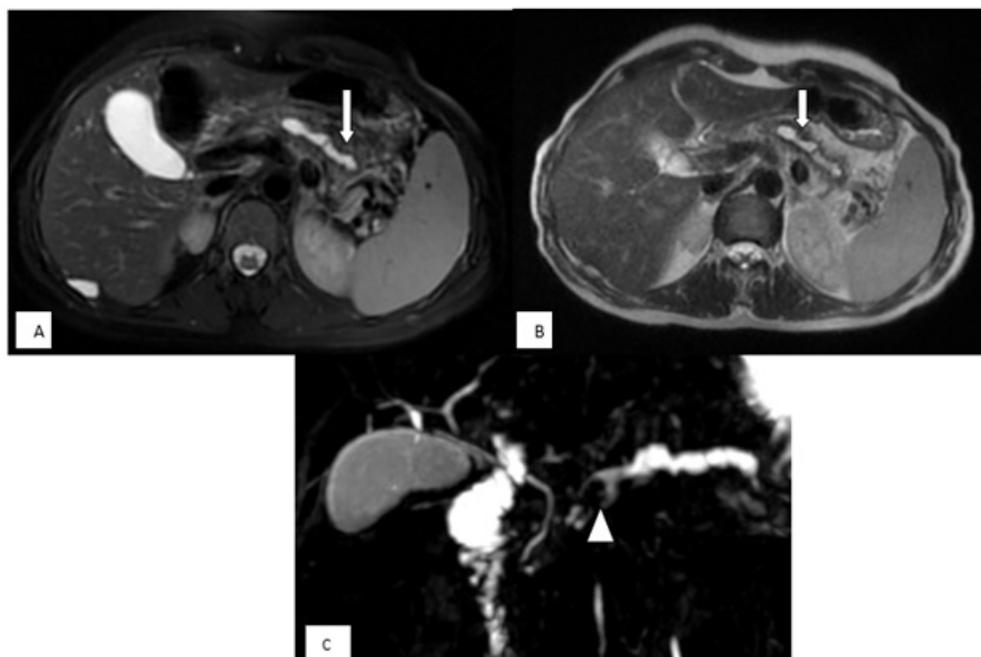


Figure 2: Pancreatic-MRI on axial T2-FS weighted sequence (A) and axial T2 weighted sequence (B) and 3D MRCP (C) showing a pancreatic atrophy (Arrow), non-uniform dilatation of the Wirsung upstream of an intraductal lithiasis (Arrowhead) and areas of signal void (intraparenchymal calcifications) (Short arrow).

4. Discussion

Pancreatic calculi are often related to chronic pancreatitis, which in turn is secondary to bile duct disease. Pancreatic stones in acute pancreatitis are rarely found [2].

Pancreatic lithiasis occurs more frequently in men, and there is a high association with alcoholic pancreatitis [3]. Epigastric pain is the main symptom, which may be associated with fever, vomiting, nausea, sweating and steatorrhea or abdominal swelling [2].

The mechanism of stone formation has not been completely elucidated. It is accepted that chronic pancreatitis, which is secondary to biliary tract disease, leads to stagnation of pancreatic secretions, the salts of which are precipitated. Pancreatic calculi are mainly composed of calcium carbonate, which is not secreted by the pancreas under normal physiological conditions, but can be secreted after an alteration of pancreatic secretion secondary to stasis or infection [4].

The stones are most often located in the main pancreatic duct of Wirsung, more rarely in one of the branches or in the glandular parenchyma, often multiple, of variable size and shape. They are usually less than 1 cm in diameter or even sandy in shape. They usually have high calcium content in the form of carbonate and phosphate, which explains their high density [4].

The diagnosis of pancreatic calculi can be made by plain radiography, abdominal ultrasound, endoscopic ultrasound, endoscopic retrograde cholangiopancreatography, endoscopic retrograde cholangiopancreatography (ERCP), cholangiopancreatography, magnetic resonance cholangiopancreatography (MRCP), CT scan and MRI [2]. The endoscopic retrograde cholangiopancreatography (ERCP) is the most accurate method to study ductal dilatation and intraductal lithiasis [3].

The aim of these radiological examinations is to classify the pancreatic lithiasis according to the type, numbers and location. They may be radio opaque, radiolucent or mixed; single or multiple; located in the main pancreatic duct, side branches or in the pancreatic parenchyma; and located in head, body or tail regions [5].

The simplest and least expensive means of exploring pancreatic lithiasis is the plain abdominal radiograph, which shows the characteristic location and appearance of calcifications. Calculi in the main pancreatic duct can be recognized by their linear arrangement along its course [3].

Abdominal ultrasound can detect pancreatic lithiasis because of its characteristic high reflectivity. It allows the study of the state of the main pancreatic duct and the detection of intraductal calculi, thus allowing the selection of patients who will benefit of surgery, especially when ERCP has not been successful [3].

Pancreatic calculi are identified on MR cholangiopancreatography as foci of low signal intensity within the pancreatic duct by analysis of axial and coronal sections. The low signal of lithiasis may be partially or completely surrounded by the high signal of pancreatic fluid (meniscus sign) [6].

Several therapeutic modalities can be proposed including endoscopic and surgical techniques. Small pancreatic lithiasis are removed by Endoscopic retrograde cholangiopancreatography, or ERCP. For large stones located in head and body, single, with no stricture, we can proceed to Extracorporeal shock wave lithotripsy (ESWL) whether or not combined with an ERCP. Surgery is indicated in case of failure of endoscopic treatment or in the presence of extensive calculi or multiples strictures [5].

5. Conclusion

In synthesis, pancreatic lithiasis are the aftermath of the continuous process of chronic pancreatitis. CP-MR is a minimally invasive technique, allowing a detailed analysis of pancreatic lithiasis as well as its impact and other associated lesions, allowing the choice of the appropriate therapeutic modality.

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