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MULIMEDIA ARTICLE - Clinical Imaging

A Pancreatico-Pleural Fistula Diagnosed with Magnetic Resonance Cholangiopancreatography

Alessandra Galluzzo[1], Elsa Iannicelli[1], Massimo Marignani[2], Gianfranco Delle Fave[2], Vincenzo David[1]

[1]Department of Radiology, S. Andrea Hospital, and [2]Department of Digestive and Liver Diseases; Second School of Medicine, University "La Sapienza". Rome, Italy

INTRODUCTION

Pancreatico-pleural fistula (PPF) represents a rare complication of chronic pancreatitis, especially in patients with an alcohol abuse history. It results from the traumatic or inflammatory disruption of the main pancreatic duct or its side branches, leading to the formation of a fistulous tract between the pancreas and the pleural cavity through the esophageal or aortic hiatus of the diaphragm [1, 2]. We report a case of recurrent chronic alcohol-related pancreatitis evolving into a PPF in a young man who underwent magnetic resonance cholangiopancreatography (MRCP).

CASE REPORT

A 29-year-old man, with increasing dyspnea, mild abdominal epigastric discomfort, anorexia and an indefinite weight loss in the two months prior to hospitalization, was admitted to our hospital. Past medical history was relevant for chronic alcoholic pancreatitis, first diagnosed two years before the present admission.

Physical examination was suggestive of a notable pleural effusion in the left pleural cavity and only mild pain was elicited on deep palpation of the epigastric region. Laboratory data were as follows: serum amylase 323 U/L (reference range: 8-53 U/L), lipase 516 U/L (reference range: 8-78 U/L) and calcium 7.9 mg/dL (reference range: 9-10.5 mg/dL). No biochemical signs of cholestasis or hepatocellular damage were found.

The pleural effusion in the left pleural cavity was confirmed by chest X-ray. Abdominal ultrasound showed a moderately enlarged pancreas and a round fluid collection with a slightly thickened wall, 2 cm in size, located in the pancreatic body. A small amount of fluid was also noted in the omental bursa. With the clinical suspicion of a PPF, further evaluation by magnetic resonance (MR) and MR-cholangiopancreatography (MRCP) was requested.

Abdominal MRCP was performed by a 1.5 T unit (Sonata Symphony Siemens, Erlangen, Germany) with a phased-array body coil. We used heavily T2-weighted sequences: a half-Fourier single-shot turbo spin-echo (HASTE) 2D breath-hold (relaxation time 1,100 ms; time of echo 87 ms; slice thickness 4 mm; acquisition time 25 sec) and a turbo spin-echo (TSE) 3D respiratory gated (relaxation time 1,820 ms; time of echo 401 ms; thickness 4 mm; acquisition time 150) with multiplanar projection reconstruction (MPR) and multiple intensity projection (MIP). Axial scans of the upper abdomen with gradient echo fast low-angle shot (GRE FLASH) 2D T1 weighted and TSE T2-weighted sequences were also obtained.

The TSE T2-weighted MR image showed a moderately enlarged pancreatic body with

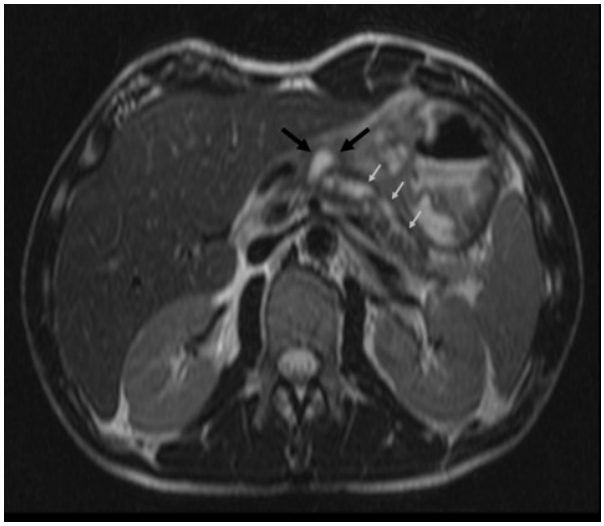

Image 1.

irregular contours and diffusely non-homogeneous signal intensity as well as a pancreatic body pseudocyst (black arrows) and main pancreatic ducct dilatation (grey arrows) (Image 1). The coronal scan HASTE 2D T2-weighted scan demonstrated a part of the proximal portion of the fistula (white arrow); an irregular dilatation of the main pancreatic duct side branches (black arrows) as well as pleural effusion in the left pleural cavity was also evident (asterisk) (Image 2). A PPF (Image 3, arrows), clearly demonstrated on the 3D MRCP sequence, appears on two different oblique MIP images as a high-signal intensity narrow structure arising from the pancreatic body pseudocyst (p) towards the left pleural cavity (asterisk). The diagnosis of PPF was confirmed by pleural fluid analysis, obtained by thoracentesis (amylase 7,137 U/L, lipase 27,000 U/L). Medical treatment was started with total parenteral nutrition (TPN) and the administration of large spectrum antibiotics, pancreatic enzymes, proton pump inhibitors and octeotride (500 µg *bid* i.m.). The patient was discharged, without dyspnea or abdominal symptoms, on medical therapy and TPN, in an improved general condition.

One month later, the fistulous tract was still present on MR and MRCP with a reduction of the omental bursa fluid collection and no further signs of pleural effusion.

Unfortunately, the patient refused any other additional follow-up.

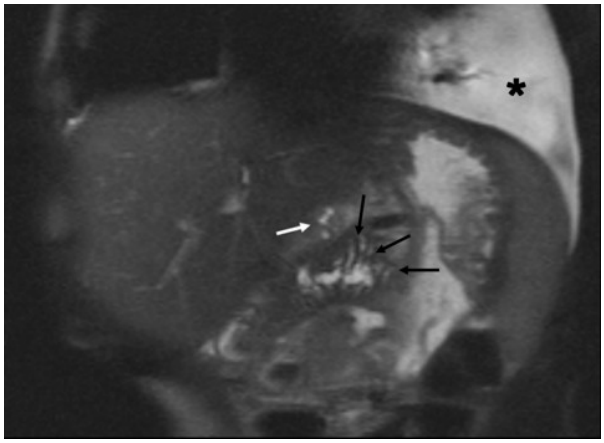

Image 2.

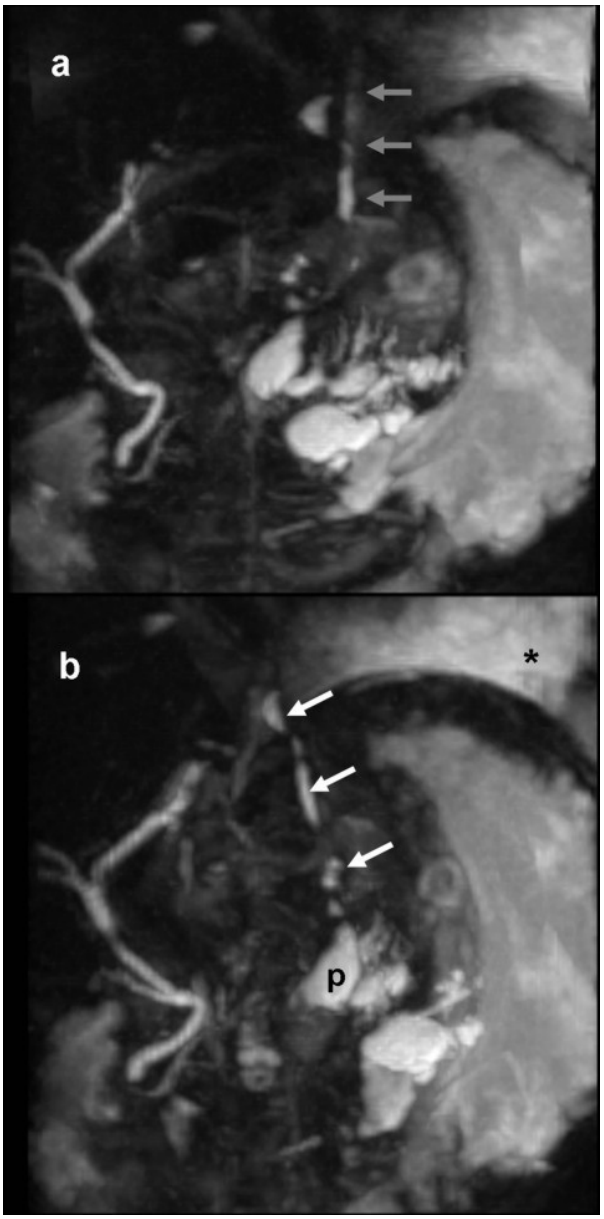

Image 3.

DISCUSSION

In this report, we describe the case of a PPF with pleural effusion, a rare complication of chronic alcoholic pancreatitis, with a reported incidence in alcoholic patients of 0.4-4.5%/year [3]. In the literature, some examples of PPF have been studied with CT [3, 4, 5] but only a few cases evaluated with MRI [6, 7, 8, 9, 10] have been described. In this clinical setting, the pathological process develops as a leak from an incompletely formed or ruptured pseudocyst. The fluid may track to the peritoneal cavity (pancreatic ascites) or into the pleural space through the path of least resistance. In the case of a PPF, the posterior rupture of a pancreatic pseudocyst produces an initial collection of pancreatic secretions in the omental bursa; it then reaches the pleural space via the retro peritoneum, usually through the esophageal or aortic hiatus. In our case, the fistulous tract arose from the pseudocyst of the pancreatic body.

The demonstration of PPF by conventional endoscopic and radiological techniques is difficult. PPF has been mainly investigated by endoscopic retrograde cholangiopancreatography (ERCP). MRCP has the advantage of obtaining rapid and accurate imaging of the biliary tree and pancreatic ducts, without any intravenous contrast agent administration [10]. It can recognize and track the fistula all the way to the pleural cavity, with an accurate definition of its relationship with the surrounding structures. Therefore, since ERCP is a costly and invasive procedure, with a small but significant complication rate (i.e., acute pancreatitis, bleeding, sepsis), we believe that MR and MRCP should be the diagnostic techniques of first choice when a PPF is suspected. The use of ERCP should be suggested when a therapeutic approach is necessary (endoscopic pancreatic endo-prosthesis placement) or in case of uncertain MR findings.

In conclusion, MRCP can be considered a relevant diagnostic tool in the evaluation of chronic pancreatitis and its complications, such as PPF. The integration of the information provided by MR and MRCP allows the more complete study of the pancreatic morphology and tissue components, the detection of PPFs, thus avoiding contrast medium administration and ERCP related-risks, and the definition of the most appropriate therapeutic plans.

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Keywords Pancreatic Pseudocyst; Pancreatitis, Alcoholic; Pleural Effusion

Abbreviations HASTE: half-Fourier single-shot turbo spin-echo; MIP: multiple intensity projection; MPR: multiplanar projection reconstruction; PPF: pancreatico-pleural fistula; TSE: turbo spin-echo

Conflict of interest No conflicts of interest

Correspondence
Alessandra Galluzzo
S. Andrea Hospital
Department of Radiology
II School of Medicine
University La Sapienza
Via di Grottarossa 1024
00100 Rome
Italy
Phone: +39-6.3377.5229
E-mail: alessandragalluzzo@libero.it

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