CLINICAL CASE

DIAGNOSIS AND MANAGEMENT OF PANCREATIC MUCINOUS CYSTADENOMA

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Abstract

Pancreatic mucinous cystadenomas (MCAs) are considered to be benign tumors with a high risk of malignant progression. The pancreatic mucinous cystadenoma is considered to be a rare condition that may lead to pancreatic cancer when not surgically resected. MCAs represent 9.7% of all neoplastic pancreatic cysts. The male:female ratio of MCAs is 1:10. The condition appears mostly in women, mean age in the 5th decade. The cyst is restricted by a fibrous capsule of variable consistency and has usually no communication with the pancreatic ductal system. The MCAs are located mostly in the body or tail of the pancreas. The MCAs located in the head of the pancreas are more likely to be malignant. Complete surgical resection is the recommended therapeutic option. We present a case of a 59-year-old female patient admitted in the Departemt of Surgery and Liver Transplatation of Fundeni Clinical Institute for recurrent episodes of acute pancreatitis. After a thorough investigation was performed, the CT-examination showed a pancreatic mass, located in the tail, measuring 30/40mm. Because the CT aspect was specific for a cystic-like lesion, surgery was recommended. The patient underwent a laparoscopic caudal splenopancreatectomy with a favorable postoperative evolution. The particularity of the case comes from the patient's clinical presentation, with recurrent acute pancreatitis and the imagistic aspect (ultrasound and CT) that initially suggested a pseudocystic-like lesion, but the elevated CA 15-3 and further elaborated examinations indicated a possible malignant lesion.

Keywords*: pancreas, mucinous cystadenoma, MCA*

Introduction

Pancreatic cysts are classified as serous cystadenomas (SCAs) which are benign tumors and mucinous cystadenomas (MCAs) and intraductal papillary-mucinous adenomas (IPMAs), considered to be benign, but with a high risk of malignant progression. The pancreatic mucinous cystadenoma is considered to be a rare condition that may lead to pancreatic cancer when not surgically resected. MCAs represent 9.7% of all neoplastic pancreatic cysts [1]. The male:female ratio of MCAs is 1:10 [1].

MCAs are defined as epithelial neoplasia, that frequently appear in women, located mostly in the body or tail of the pancreas. The mean age to diagnose is in the 5th decade, but the age range varies between 20-82 years [3].

MCAs are well-encapsulated and vary in shape and size. The average size is between 8-10 cm but can vary from 1.5 to 35 cm [4].
The cyst is restricted by a fibrous capsule of variable consistency, calcification may be

present, and is often multilocular. The mucinous content of the cyst varies in colour, density and thickness.

The histological features of the MCAs are the presence of the pathognomonic ovarian-type stroma, and the mucin-producing epithelium. The microscopic findings identifies four different histological types: mucinous cystadenomas, borderline mucinous cystic neoplasms, mucinous cystic neoplasms with in situ carcinoma, and invasive mucinous cystadenocarcinomas, with different grades of dysplasia and even stroma invasion [5,6].

Immunohistochemical (IHC) tests reveal the heterogeneity of staining for carcino-embryonic antigen (CEA), CA 19-9 and cytokeratins [7]. In the ovarian-type stroma smooth muscle actin and vimentin where shown [7].

The analysis of the cystic fluid has helped differentiate between the benign MCAs and mucinous adenocarcinoma, which has a high concentration of CA 15-3, compared to the benign MCA [8]. The histological and IHC classifications are prognostic indicators of the disease progression.

These tumors are mostly characterized by a silent clinical progression, symptoms may be related to the compression of adjacent organs. Most of the smaller cysts are found incidentally, during diagnostic evaluation for other symoptoms. However, clinical symptomatology may be present, even though non-specific, including abdominal discomfort, epigastric pain, recurrent pancreatitis episodes, jaundice, nausea, vomiting, diarrhea, postprandial fullness or weight loss. Diabetes mellitus can also be a related symptom of the MCAs [3].

There seems to be a progression from cystadenomas to borderline or even cystadenocarcinomas, the most invasive form of MCAs. [9] These are the reasons why complete surgical resection is the main treatment.

Case presentation

H.M., a 59-year-old female patient, was admitted in the Departemt of Surgery and Liver Transplatation of Fundeni Clinical Institute with several episodes of acute pancreatitis for the last two years. The patient was referred to our clinic after a thorough investigation that showed a pancreatic cystic-like lesion. On admission, the patients physical examination was normal, except the tenderness in the epigastric region. Laboratory examinations showed a slightly elevated CA 15-3, but otherwise normal tests, including a complete blood count (CBC), liver enzymes, serum amylase, kidney function tests, blood sugar and coagulation tests. The pre-operative computed tomography (CT) showed a well-defined thick-walled cystic mass in the pancreatic tail measuring 30 x 40 mm, in contact with the pancreatic duct (Figure 1). Intramural calcifications and biliary sludge can be seen on the CT. No suspicious lymph nodes or metastases are found. For a complete pre-operative diagnosis, an endoscopic ultrasound guided fine needle aspiration (EUS – FNA) was recommended, but the patient refused the examination.

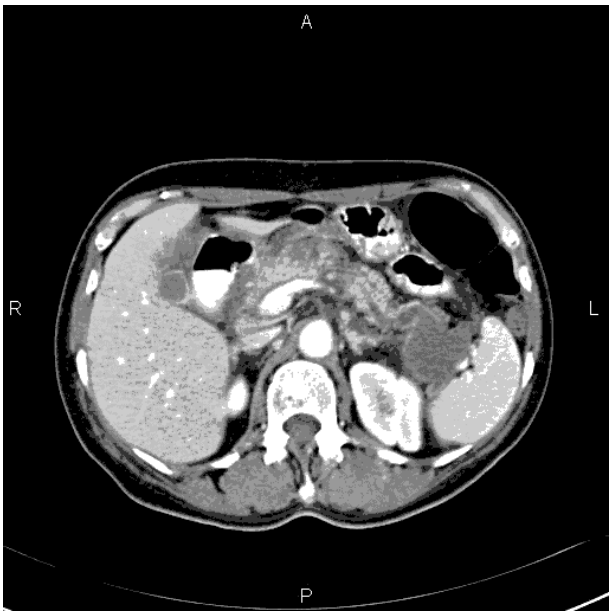

Figure 1 - Preoperative aspect of the pancreatic cystic-like tumor with invasion and dilation of the pancreatic duct.

The pathological history of the patient reveals an autoimmune thyroiditis treated with Euthyrox since 1995, arterial hypertension and hysterectomy in 2012 for a fibroid uterus.

The treatment for the pancreatic cyst is strictly surgical with complete excision of the tumor. One month pre-operative the patient underwent an anti-pneumococcus and anti-meningococcus vaccination.

Laparoscopic distal splenopancreatectomy for the caudal cystic lesion was proposed. The patient is placed on the operating table in

reverse Trendelenburg position. The thorough exploration of the peritoneal cavity is a greate advantage of the laparoscopic approach. The lesser sac was entered by dividing the lesser omentum along the greater curbature of the stomach, lateral of the gastroepiploic vessels. The stomach was retracted antero-superiorly, the pancreas was explored and the cyst revealed (Figure 2).

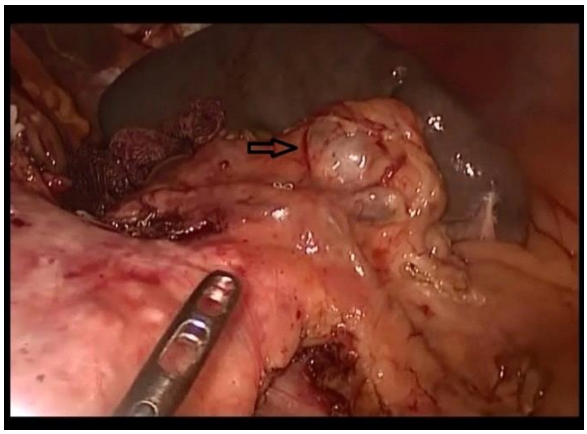

Figure 2 - Intraoperative aspect of the cystic lesion.

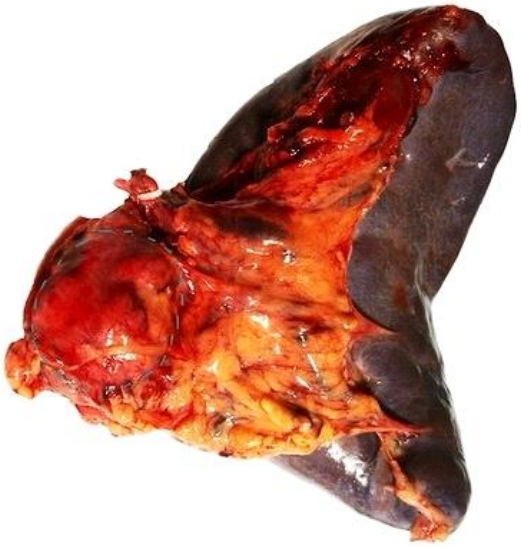

Figure 3 – Surgical specimen: macroscopic aspect of the pancreas tail and spleen.

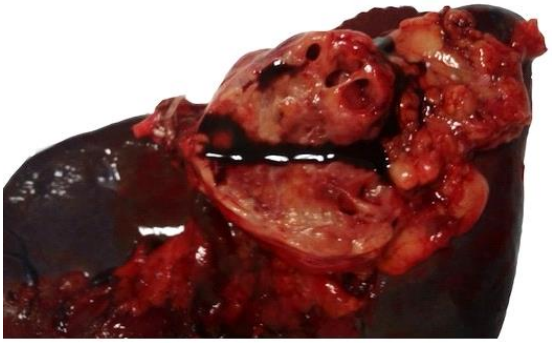

Figure 4 – Surgical specimen: macroscopic aspect of the cysts' content

The splenic vessels are isolated and ligated. After the complete dissection, the pancreas will be divided using a linear stapler. The pancreatic stump is oversewn to ensure hemostasis. The spleen is also dissected, and both the pancreas and the speel will be removed en bloc, using an endobag, through a pararectal incision. Finally, a careful hemostasis control at the pancreatic stump, the splenic vessels and a scrupulous exploration of the peritoneal cavity are made. A drainage tube is placed. The macroscopic aspect and the amylase dosage of the drainage fluid helps determine when the drain can be removed (Figure 3,4).

The post-operative CBC showed an increased level of platelets and Aspenter 75mg 1cp /day was recommended. The patient had a favorable evolution, with no fever episodes, normal resumption of bowel activity, good digestive tolerance and was discharged post-operatively on day 7.

The final pathology report provided the diagnosis of a mucinous cystadenoma with low-grade dysplasia and the IHC examination confirmed the diagnosis (ICD-O: 8470/0).

One year after the surgery, a CT-scan showed normal aspect post-spleno-pancreatectomy and a normal calibre Wirsung duct (Figure 4).

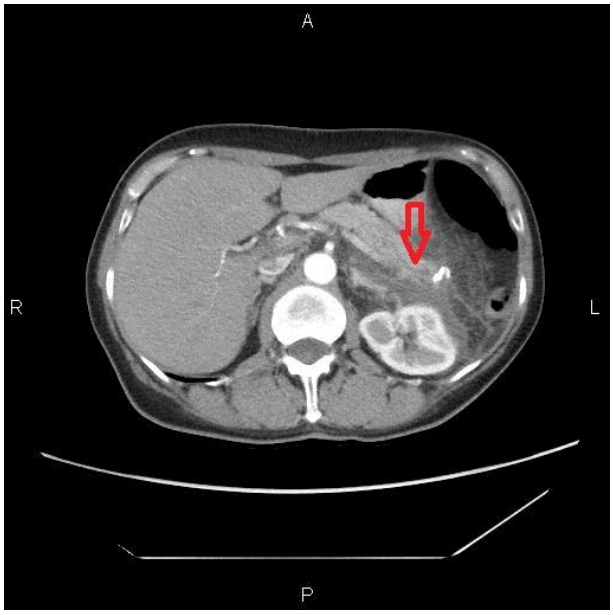

Figure 5 - Post-operative aspect; normal caliber pancreatic duct.

Discussions

Pancreatic cyst are increasingly discovered and diagnosed due to widespread use of imaging, such as CT, MRI or endoscopic ultrasonography. Differentiating benign cystic lesions from pre-malignant or malignant cysts remains a clinical challenge. The suggestive imaging aspect may lead to additional examination, such as EUS – FNA, that will provide a certain diagosis. This technique is the preferred approach to investigate these tumours and helps determinate the pre-operative diagnosis due to the histopathological, IHC and genomic profile examination of the cysts' fluid. Some of the diagnostic markers that are evaluated are CEA, CA 19-9, CA 15-3, amylase, lipase, cytokeratine and others [7, 10]. The scattered cells express neuron-specific enolase (NSE), in some cases also serotonin can be revealed [11].

The genomic mutations that have been studied are similar to those in the pancreatic ductal cancer. The K-ras oncogene, located on chromosome 12 p arises early in the MCAs evolution. With the occurrence of atypia, K-ras mutations seem to multiply and have been detected in 20% of the mucinous cystadenomas and up to 90% of the MCAs with in situ carcinoma [12].

The treatment of choice for pancreatic cysts is, as earlier mentioned, complete surgical excision, regardless of the size. The surgical technique depends on the area where the cyst developed. For cysts located in the head of the pancreas, the surgical procedure is cephalic duodenopancreatectomy. For cysts located in the body or tail of the pancreas, distal pancreatectomy or splenopancreatectomy is recommended. In our case, the spleen is excised due to the cysts' position in the tail, with close contact to the splenic hilum. Spleen preservation should be avoided in case of large cysts, with risk factors for malignancy. Several studies compared patients who sustained distal pancreatectomy or distal splenopancreatectomy and showed no critical differences regarding the peri-operative complications. [13, 14] The cystic enucleation may be considered for lesions smaller than 2 cm with benign pre-operative aspect that are easily approachable, and aims to avoid future pancreatic insufficiency. [15, 16] The minimally invasive approach is preferred for small lesions. Laparoscopic distal splenopancreatectomy has a complication rate between 15 % and 20 %, a mortality rate of 0 %, is associated with a rapid recovery and reduce the hospitalization time. [17].

Conclusions

- The high resolution imaging techniques provide compelling information about the localization, content and relationship with the adjacent organs and help develop a surgical resection plan.
- An accurate pre-operative diagnosis can be provided using EUS – FNA and the histopathological, IHC and genomic profile examination of the cysts' fluid, indicating the therapeutic management.
- A minimally invasive approach was preferred due to the lesions' relatively small dimension and localization in the pancreas tail, with several benefits such as decreased blood loss, less pain, smaller incisions, shorter hospital stay and a fast recovery for the patient.
- Complete excision was possible and post-operative CT scans are indicated in the first year because complications may occur, such as fistulas.
- At this moment, no non-invasive imaging technique can identify the benign MCAs from the in situ invasive cystadenoma, wherefore all the cystic-like pancreatic lesions should be completely resected, regardless of size, to prevent the progression towards an invasive mucinous cystadenocarcinoma.

The particular character of the case

For approximately two years, the patient had recurrent acute pancreatitis and the imagistic aspect (ultrasound and CT) initially suggested a pseudocystic-like lesion and led to a simple medical treatement of the episodes. The elevated CA 15-3 raised suspicions and further elaborated examinations indicated a possible malignant lesion with indications for complete excision of the pancreatic tail and spleen.

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