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Case Report

Several New Mucinous Benign Pancreatic Cysts - Probably A New Pathological Unit?

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Abstract

Introduction: The cystic lesions of the pancreas consists of a range of pathologies which may be broadly divided into neoplastic, non-neo plastic cysts. Recently a new non-neoplastic cystic lesions, called mucinous non-neoplastic cysts (MNCs), have been described.

Materials and Methods: The imaging methods (ultrasound and CT) were used as well as invasive imaging methods under image control with a view of the histological verification of the diagnosis. Five cases of pancreatic cystic lesions is described, accidentally detected by ultrasound and CT scan made for different purpose.

Results and Discussion: The finding was a 28-36 mm cysts in the body of the pancreas, apparently communicating with the pancreatic duct. The Endoscopic Retrograde Cholangiopancreatography and laboratory tests of liver function, serum carcino embryonic antigen (CEA)and carbohydrate antigen C19 -9 were within normal limits. After the distal pancreatectomy in three of the patients the histological speciment showed a simple cyst, lined with mucinous epithelium. Two cases are without any changes in size and structure under 2 years surveillance.

Conclusion: We recommend that patients diagnosed with 'benign' mucinous neoplasm are closely monitored due to the inability to completely confirm the benign nature of the lesions. Moreover, the existence of the MNC, as a truly unique cystic lesion, remains controversial.

Keywords: Cystic Lesions; MNCs; Imaging

Introduction

Pancreatic cyst lesions consist of a variety of pathological nodules and can generally be classified into neoplastic and non-neoplastic cysts [1]. The following types of cystic neoplasms are predominant: mucinous cystic tumors (MCT), intrauterine papillary mucinous tumors (IPMTs) and solid pseudopapillary neoplasms (SPPNs) that are both premalignant and malignant [2]. Serous cystic lesions form another large group of cystic neoplasms that are predominantly benign [3]. On the other hand, non-neoplastic cystic tumors consist of congenital cysts, lymphoepithelial cysts, retentive cysts and endometrial cysts [3].

Recently, a new group of non-neoplastic cystic lesions, called mucinous non-neoplastic cysts (MNC), has been described. We describe down the case of a pancreatic cystic tumor that presents signs that increase the possibility of this diagnosis [4,5].

Materials and Description

Five patients aged from 56-62 year old (4 woman and 1 men) were scanned computer-tomographically (CT), and cystic lesions of the pancreas ranged from 15 to 35mm was detected. The major pancreatic canal is not dilated (Figure 1).

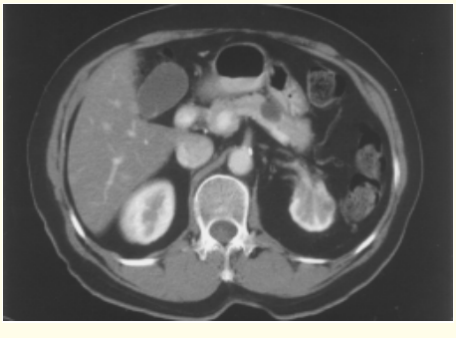

Figure 1: CT image representing a cystic lesion in the pancreatic body. There aren't dilated pancreatic duct.

At a control US study 6 months later in two of the patients the finding was presented with an increase of the cystic lesion up to 35 mm (Figure 2).

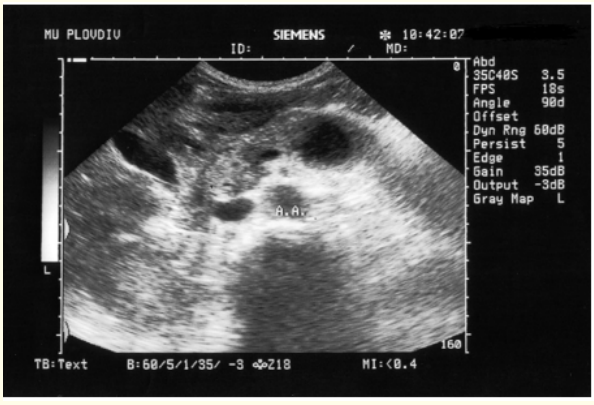

Figure 2: Ultrasonic image of the cystic lesion at the pancreatic body with diameter of 35mm.

A MRI study was conducted of the same patient to better characterize the cystic lesion. The finding is a 36 mm cyst in the pancreas, seemingly communicating with the pancreas canal (Figure 3).

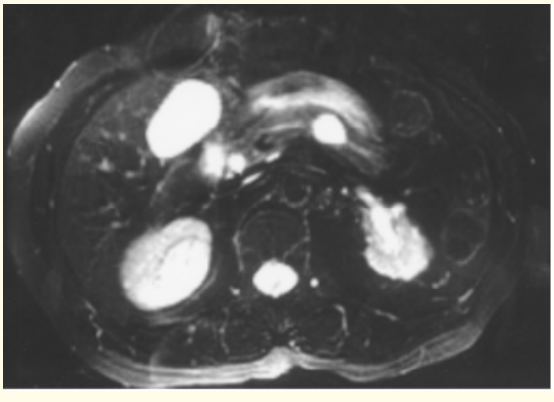

Figure 3: MRI image of a cystic lesion of the pancreatic body that is suspected of communicating with the pancreatic canal.

The main pancreatic canal and its lateral branches are not dilated in all of our patients, nor is there any presence of nodules. Laboratory tests for liver function tests, serum carcinoembryonic antigen and carbohydrate antigen C 19-9 are within normal range. Distal pancreatectomy were performed in 3 of the patients due to an unspecified diagnosis of cystic neoplasm of the pancreas and in two cases the persistent histological preparation showed a simple cyst with a mucosal epithelium (Figure 4).

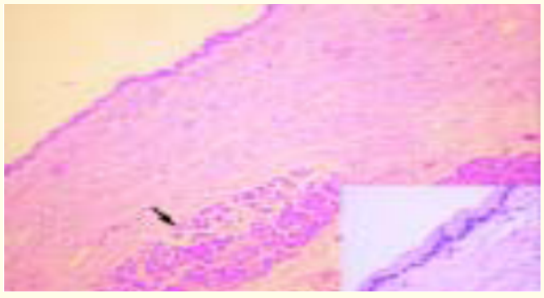

Figure 4: Histological preparation stained with HE. A cystic wall with a cuboidal epithelium is seen, delimited by a fibro-collagen stroma without signs of atypia. Visible pancreatic acins.

There is no abnormal presence of atypia and dysplasia of the epithelium as well as communication with the pancreatic duct. The pancreatic tissue was not histologically presented with significant changes. With 2 year follow-up with US and CT investigation, no signs of tumor recurrence were found in the operated three patients and in the other two cases aren't changes in size and structure of the suroundings.

Result and Discussion

In 2002, Kosmahl., *et al*. Describe a new cystic pancreatic change in five patients for whom the term mucinous non-neoplastic cyst (MNC) [1] is introduced. The same group subsequently reported 4 cases (of 9 patients) presented this new group of cystic pancreatic changes in a retrospective review of 418 cases of cystic tumors [3]. Mucinous non-neoplastic cysts occur in five women and four men with an average age of 58 years. Cyst size ranges from 3 to 12 cm and are localized in the head, head/tail/one/and head/body (two). Three patients present with mechanical jaundice due to external compression of the main pancreatic duct from the cystic formation.

MNCs are characterized pathologically with mutant epithelial differentiation, lack of cellular atypia or increased proliferation, a fine layer of ancellular stroma, and lack of communication with the pancreatic channel [1]. These cysts by definition do not exhibit any neoplastic features such as dysplasia, proliferative activity, signs of invasive growth or metastasis. The origin and development of this pathology is not known and can only be supposed [5,6].

Abnormal MNCs should be differentiated from other cystic neoplasms of the pankreas, which are covered with mucosal epithelium, such as mucinous cystic tumors (MCTs), intrauterine papillary mucinous tumors (IPMTs) and retention cysts.

The images of MNCs upon MRI may be indistinguishable from that of MCNs, especially if the cysts are large and have thick walls. FNA cytology of the epithelium of MNCs shares that of retention cysts. Retention cysts can be excluded based on the absence of potential causes or evidence of ductal obstructions; however, this is not always possible. Nonetheless, although EUS-FNA could not distinguish MNCs from retention cysts, treatment and prognosis will not be affected owing to the benign nature of both diseases (Figure 5).

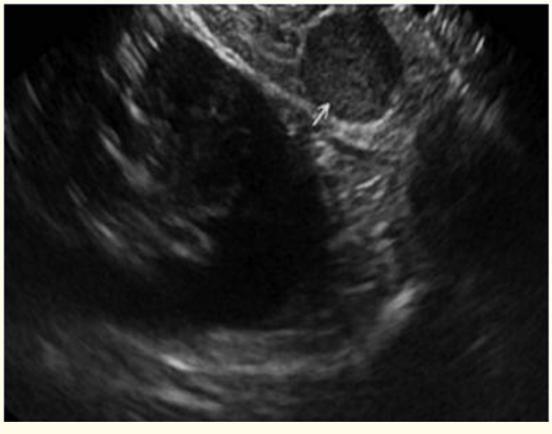

Figure 5: EUS image showed a small homogeneous hypoechoic lesion in pancreas tail on endoscopic ultrasound.

MCTs are large, well-differentiated cystic pancreatic tumors that are usually presented as single or multifocal pancreatic and pancreatic cysts in middle-aged women [7,8]. These tumors, like MNCs, are covered with a mucosal epithelium, demonstrating a periodic positive acid-Schiff and Alcian blue reaction as well as a positivity of cytokeratins 7,8,18,19 and 20,7,8.

IPMT is a clearly defined clinicopathological unit described and demarcated by MCTs by the World Health Organization in 1996 and by the Institute of Pathology of the Armed Forces in 1997 [12]. As well as retention cysts and MCTs, the walls of this tumor are covered with mucosal epithelium. This tumor is characterized by cystic dilation of the main pancreatic duct or its branches due to a large amount of produced and excreted mucin via a pathologically changed aphthale papillary aperture in elderly males [12]. IPMT is often associated with chronic pancreatitis, communication between cyst and pancreas and pancreas dilation [13]. These tumors have a high, colonic, mucin-containing epithelium, often with papillary proliferation and extensive involvement of the pancreatic duct [14]. IPMT epithelial cells, as well as MCT, are usually presented with varying degrees of atypia and dysplasia with high malignant potential.

The pancreatic cysts of this study demonstrates histological features susceptible to MNCs, in cluding single-cell cyst-plated cytoplasmic cell cytoplasmic mucin cells, lack of cell proliferation or atypia without pathologically demonstrated communication with the pancreatic duct and fine sciatic support stroma. An argument against this diagnosis is the presence of communication with the major pancreatic duct presented on preoperative MRI, which makes retention cyst and IPMT difficult.

According to Kosmahl., *et al*, MNCs can be easily differentiated from IPMT due to the lack of pancreatic channel communication, which is not pathologically evident in the five cases of MNCs in their initial study [1]. However, this criterion in the diagnosis of IPMT is potentially controversial because the presentation of communication depends on several factors including the choice of the re-operative imaging method and the precision in the pathological study. Sometimes the ductal communication is not presented to the US, CT or ERCP, but can be seen on the MRT or pathological study and vice versa [15]. In the five subjects presented, none of them were tested with MPTs and only one with ERCP, which does not prove communication with the duct [1]. The remaining four patients were studied with CT, which is not particularly reliable in portraying communication. Consecutive communication can be demonstrated in some of the patients presented if MRCP or ERCP is performed.

Conclusion

Diagnosis of MNC can be significantly hampered by the overlapping of many clinical-pathological signs with retention cyst, MCTs and IPMTs. The diagnosis of each of these pathological nodes does not depend on a clinicopathological indication, but on a constellation of these (Table 1).

We recommend that a patient with a diagnosis of "benign" MNC be closely monitored because of the inability to absolutely confirm benign nature. Moreover, the existence of the MNC, as a truly unique cystic lesion, remains controversial because the reported cases of this neuralgia may simply represent a variant of an existing pancreatic pathology that overlaps the underlying pathological features of pancreatic cystic tumors plagued with a mucosal epithelium. All imaging diagnosticians, surgeons and pathologists need to share their experience in order to increase our diagnostic and behavioral abilities in this particular pathology.

Diagnosis / Signs	Retention cyst	IPMT	MCT	MNC
Mucinous epithelium	Presented	Presented	Presented	Presented
Cellular dysplasia	Missing	Usually presented	Usually presented	Missing
Communication with a pancreatic duct	Presented	presented	It is usually missing	Missing
Ductal obstruction with dilation	Presented	Usually presented	It is usually missing	Missing
Secondary pancreatitis	There could be	Often Presented	It is usually missing	Missing
Ovarian stroma	Missing	Missing	Usually presented	Missing
Paul	No Predominance	Mostly Men	mostly women	No Predominance

Table 1: Comparison of signs in pancreatic retention cysts, IPMT, MCN and MNC.

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