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Macrocystic Serous Cystadenoma of the Pancreas

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Abstract:
Objective:
Define the histological and radiological appearance of the macrocystic serous cystadenoma of the pancreas, as well as the main differential diagnoses.
Summary Background Data: *Macrocystic serous cystadenomas (MSCP) are a rare benign tumor of the pancreas which represent an atypical macroscopic morphologic variant of serous cystadenomas (SCA). Diagnostic criteria, potential for growth or malignancy, and outcomes are not well defined. As a result, management for patients with serous cystadenomas varies widely in current practice.*
Materials and methods:
One case of MSCP which was treated chirurgically, has been reported on our study.
Results: *We report a case of 49 years old women, who was suffering from chronic epigastralgia. Ultrasound and abdominal CT showed a pancreatic corporeo caudal lesion cystic with thin wall, fluid density, measuring 54x52mm not enhancing after injection of contrast product. The patient underwent a pancreatectomycorporo-caudal in front of the suspicion of a false cyst of the pancreas.*
Conclusion: *Imaging techniques have low diagnostic power in terms of differentiation of MSCP compared to other pancreatic cystic lesions (such as MCA, pseudocyst, and IPMNs). In the clinical practice of MSCP, surgery appears to provide broader indications than those related to the pathological outcome, due to the need for a correct differential diagnosis from potentially malignant cystic tumors and symptoms requiring frequent treatment.*

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I. Introduction

Serous cystic neoplasm is a rare pancreatic neoplasm. They are increasingly diagnosed in the modern era. More frequent use of radiography and advances in imaging techniques have led to larger numbers of cystic lesions being identified (1). Most of cystadenomas are microcystic, but unilocularmacrocystic forms exist. Only 16 cases have been reported in the English literature (2), and clinicopathologic features of this rare variant are not well-defined.SCM of pancreas poses a differential diagnosis problem with the other cystic lesions of the pancreas, notably the pseudocyst, mucinous cystadenoma, the IPMNs, and the cystic lymphangioma. This article reports on one additional case of macrocystic variant of serous cystadenoma of the pancreas with particular attention to the problems of differential diagnosis.

II. Case Report

We report a case of 49 years old women, who was referred to our hospital university center for chronic epigastralgia. On abdominal examination, there is sensitivity to palpation of the right hypochondrium, no defense or palpable mass. The rest of the exam was featureless. In the biological assessment, lipasemia was normal. Radiologically, ultrasound and abdominal CT showed a pancreatic corporeo caudal lesion cystic with thin wall, fluid density, measuring 54x52mm not enhancing after injection of contrast product. There was no cyst puncture. The patient underwent a pancreatectomycorporo-caudal in front of the suspicion of a false cyst of the pancreas.

Macroscopically, we received a resection of 8x6x5cm containing a pancreatic parenchyma of 4x3.5x3cm.

On histological examination, it is a pancreatic parenchyma with a unilocularmacrocystic formation, lined by a cubic epithelium, made of non-atypic cells, with a regular arrobid nucleus surrounded by eosinophilic cytoplasm (PAS +). The stroma is fibrous. (Figure 1,2)

Moreover, the rest of the pancreatic parenchyma is substantially normal. Absence of sign of malignancy.Absence of cyto-nuclear atypies.

The immunohistochemical study shows a positivity of cells for CK7 + and a negativity for ACE-. (Figure 3)

The anapath result was in favor of a macrocystic serous cystadenoma of the pancreas.

The short-term evolution was marked by the appearance of a hemoperitoneum of great abundance, due to a lesion of the splenic artery. Therefore, she had a splenectomy of hemostasis. The operative follow-up was favorable.

III. Discussion

Over 25 years ago, in what is now a landmark publication, Compagno and Oertel described 34 cases of serous cystadenoma of the pancreas[4]and established the differences between this benign lesion and the mucinous cystic neoplasm with malignant potential. In the Compagno and Oertel series, mean tumor diameter was 10.8 cm and 29% of patients were asymptomatic [3].

Our work confirms the mean age of men with serous cystadenoma is more than 7 years older than that of women.

The reasons for this difference are not immediately evident, although the larger size in males (6.3 vs. 4.5 cm) suggests a delay in diagnosis.

Most of the time, MSCP are asymptomatic with fortuitous discovery. Rarely, we can find a mass syndrome (pain in the right hypochondrium, palpable mass ...).

Radiographic imaging is a potent tool with which to diagnose serous cystadenoma of the pancreas, but limitations exist. The most widely applicable radiographic test at the current time is helical CT scanning with thin cuts through the pancreas, which often can provide assistance in the differentiation between serous and mucinous neoplasms. Classic CT findings suggestive of serous cystadenoma include a central scar with the "honeycomb" appearance of microcysts, found in the more common microcystic variant of serous cystadenoma. However, the rarer oligocystic or macrocysticvariants, may be more difficult to differentiate from mucinous tumors based on CT findings(6).Other modalities such as magnetic resonance imaging and magnetic resonance cholangiopancreatography may be more useful in differentiating mucinous tumors such as IPMT from serous cystadenoma[2].In the future, newer techniques including F-18-fluorodeoxyglucose positron emission tomography (FDG-PET) may help distinguish benign and malignant pancreatic cystic lesions.

EUS has been proposed as an ideal imaging technique for pancreatic cystic lesions[5]. Ultrasound can readily characterize cysts and high-resolution imaging of the pancreas can be achieved through endoscopic means. Needle aspiration of pancreatic cystic lesions can be used to obtain fluid for cytology, and cyst fluid tumor markers can be used for diagnostic purposes. Cyst fluid carcinoembryonic antigen (CEA) values are universally low in serous cystadenomas, trend higher in mucinous lesions, and are generally even more elevated in mucinous cystadenocarcinomas[11]. Although cytologic samples diagnostic of serous cystadenoma are obtained in less than 50% of cases, when such samples are positive, the specificity is high.

In determining the diagnosis of a serous neoplasm, on gross examination, lesions have the appearance of unilocular cysts with gray-white walls containing a yellowbrown, watery, serous fluid. Their size are ranged from 1.4 to 5 cm (mean 3 cm). The walls of lesions are ranged from 1 to 3 mm in thickness[7]. Characteristic features of tumors, such as a central stellate scar or delicate septa,are usually absent. The macroscopic features of the tumor in our patient distinctly differed from those characteristically observed in case of MCA, and were not helpful.

Microscopic examination revealed a cuboidal serous epithelium, with clear eosinophilic cytoplasm and central, round-to-oval nuclei[8]. In accordance with its benign behavior, SCP does not show evidence of necrosis, infiltrative architecture, or lymphovascular/perineural invasion, and significant cell proliferation in the form of mitotic figures is generally not observed. These microscopic findings define this tumor as a serous cystadenoma. Abundant glycogen is demonstrated within the tumor cells judged by the periodic acid-Shiff (PAS) reaction(9), but not with PAS-diastase and Alcian blue. The uninvolved pancreas is normal, or somewhat atrophic with occasional inflammation.

Indeed, analysis of the cyst fluid helps to determine the serous nature of the cystic tumor. The presence of isolated or clustered cuboidal cells in FNA smears containing round uniform nuclei with fine chromatin and granular cytoplasm stained with PAS evokes the diagnosis of serous cystadenoma. However, FNA of serous cystadenomas are often acellular or hemorragic[7]. Low levels of tumor markers in the cyst fluid, notably low levels of CEA less than 5 ng/mL, are specific for an exclusion of mucinous cystadenomas and cystadenocarcinomas[14].Unilocular lesions other than cystadenomas may contain low tumor marker levels (CEA and CA72-4) such as benign congenital solitary cyst or in cysts diagnosed in patients with genetic disease, such as von Hippel–Lindau disease.

Although the differential diagnosis of SN includes other cystic lesions of the pancreas, such as intraductal papillary mucinous neoplasm and mucinous cystic neoplasm, along with typically solid neoplasms, such as neuroendocrine tumor, solid pseudopapillary neoplasm, and pancreatic ductal adenocarcinoma, which may mimic the solid variant of SN or exhibit a deceptively cystic-appearing architecture. In addition to neoplastic processes, pancreatic pseudocyst is relevant to the differential diagnosis of SN with extensive cystic degeneration, the latter being distinguished by its characteristic epithelial lining, which usually can be identified

with sufficient sampling[10]. Generally, the unique and consistent morphologic features described above are sufficient to guide the diagnosis of SCP. In particular, the afore mentioned low-grade cytologic appearance, along with the absence of malignant characteristics, such as perineural or lymphovascular invasion, is perhaps most critical to distinguishing SN from malignant epithelial proliferations[1]

Morphologically typical and asymptomatic serous cystadenomas can be simply monitored. The operating indications remain exceptional(12). The surgical procedure must be adapted to a benign tumor: derivation of the main bile duct in case of compression, and in case of excision: duodeno-pancreatectomy, left pancreatectomy retaining the spleen. Some of these procedures are feasible by laparoscopy.

Macrocystic serous cystadenoma of the pancreas is a benign tumor, whose prognosis is rather favorable. The treatment is often conservative.

Although MSC may not yield fatal metastases, their location in the pancreas and potential for expansive growth can produce clinically significant consequences[13]. Death can result from intra-abdominal hemorrhage and gastrointestinal or biliary tract obstruction. At the same time, depending on the tumor's size and location, curative resection also comes with some risk of morbidity or mortality. Whereas the rate of perioperative mortality actually exceeded death due to disease in earlier studies of SN, reports of death secondary to these surgeries in tertiary care centers are now exceedingly rare. To complicate matters, definitive preoperative diagnosis using radiography, fluid sampling, or needle biopsy remains a significant challenge.

IV. Conclusion:

The serous cystadenoma of the pancreas is thought to be a benign tumor without evidence of malignant degeneration. Recently, unilocular or macrocystic serous cystadenomas have been identified, and treatment modalities are being examined. The present case and those reported in earlier series are significant for the fact that all of these tumors may have been misdiagnosed as pseudocysts or mucinous tumors.

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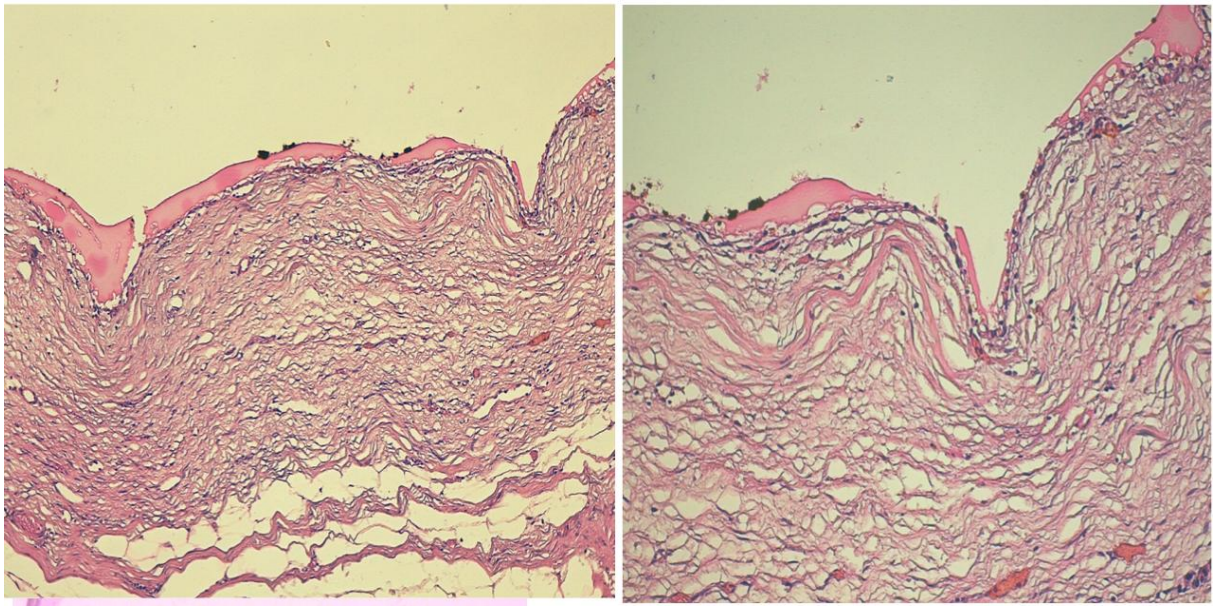

figure 1. Microphotography showing the cystic nature of the lesion. The epithelium is made of bland cuboidal serous cells. (HE; X200)

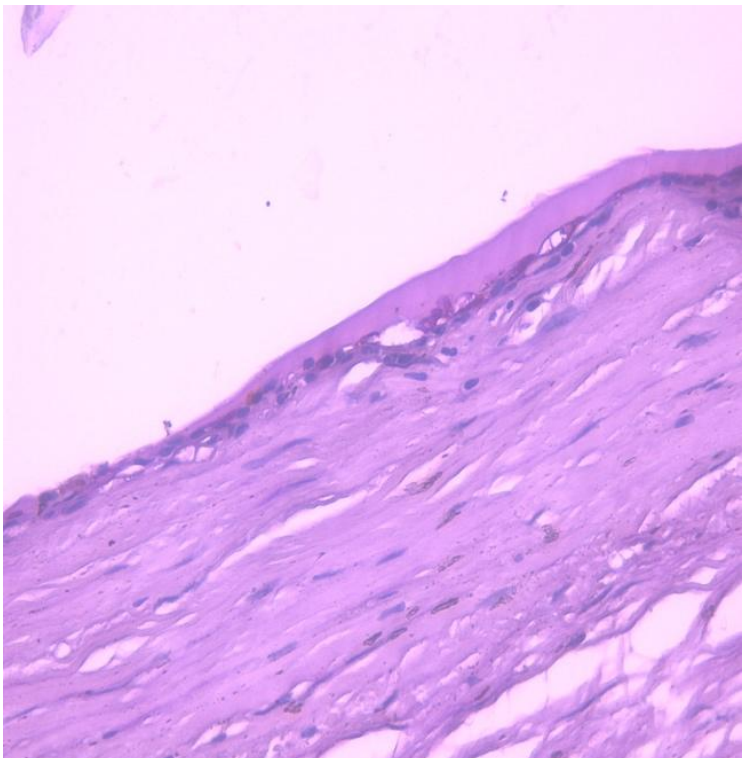

figure 2. Microphotography showing that epithelial cells have PAS positive cytoplasms (PAS)

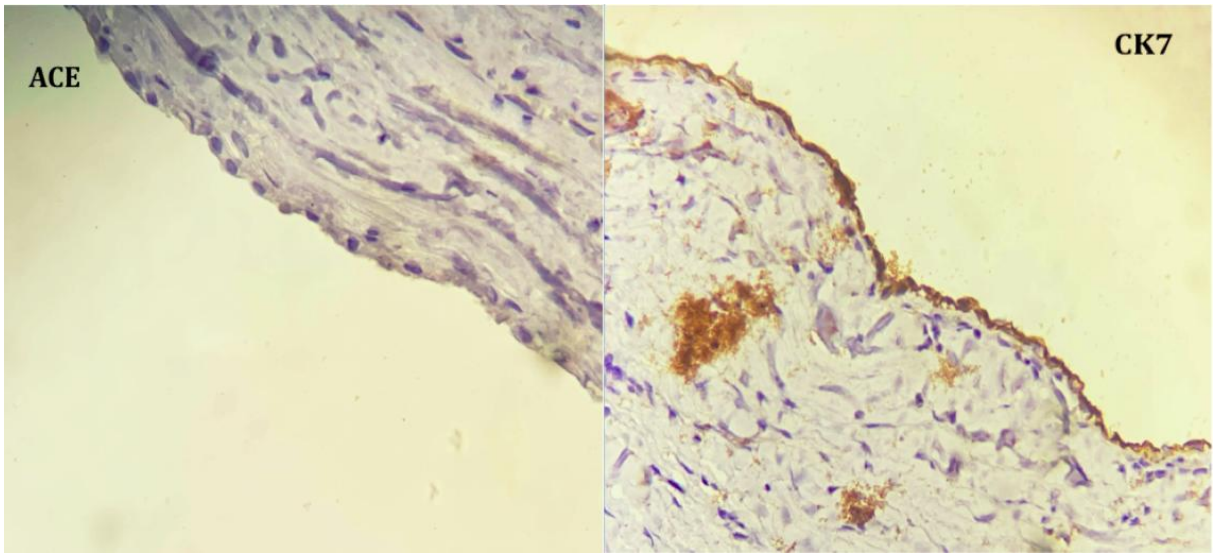

figure 3. Immunohistochemical studies reveal positivity of the tumor cells to Cytokeratin 7 and negativity for ACE.

Pathology	Micrscopy	Features	Immunohistochemistry
Macrocystic serous cystadenoma of the pancreas	cuboidal serous epithelium, with clear eosinophilic cytoplasm and central round-to-oval nuclei.	P.A.S + Alcian Blue-	-Positivity for :CK7+, EMA (30%), alpha inhibin (82%), MUC6 (70%). -Negativity for : ACE, trypsin, chromo A, synaptophysin, S 100, desminvimentin.
Cystic lymphangioma	Larger cyst.	P.A.S-	CK-
Mucinous cystadenoma	larger cystic spaces,united or oligocystic.	Mucine + Atypia	ACE+
Pseudocyst	a fluid collection surrounded by granulation tissue and without epithelial lining.	High Lipase	

Table showing the characteristics of the different differential diagnoses.

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