Epithelioid leiomyosarcoma:

A rare cystic tumour of the pancreas

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Dedicated to L. A. Sokol, MD, in memoriam.

Summary

The purpose of the case report presented is to show the pitfalls of preoperative diagnosis of cystic epithelioid leiomyosarcoma of the pancreas. The values and limits of endoscopic ultrasonography, cytology and other diagnostic methods are discussed. Despite extensive evaluation, the final diagnosis could only be confirmed postoperatively.

Key words: *cystic pancreatic neoplasia, endoscopic ultrasonography, fine needle aspiration biopsy*

Souhrn

Epiteloidní leiomyosarkom – vzácný cystický tumor pankreatu

Primární leiomyosarkom pankreatu je vzácně se vyskytující onemocnění. Jeho cystická varianta je považována za raritní. Ve světovém písemnictví bylo dosud zaznamenáno pouze několik případů. Je popsán případ 54leté nemocné s touto diagnózou. V diferenciální diagnostice byly využity všechny dostupné vyšetřovací modality včetně endoskopické ultrasonografie doplněné o aspirační cytologii. Správná diagnóza byla určena až pooperačně z histologického vyšetření resekátu. Cílem sdělení je připomenout, že cystický epitelioidní leiomyosarkom má být zahrnut do diferenciální diagnostiky cystických neoplazií pankreatu, a to také v případech, kdy cytologické vyšetření podporuje diagnózu adenokarcinomu.

Klíčová slova: *cystická neoplazie pankreatu, endoskopická ultrasonografie, tenkojehlová aspirační biopsie*

Primary leiomyosarcoma originating in the pancreas is an extremely rare type of pancreatic neoplasia. Its cystic variant is even less common and only a few cases have been reported in the literature so far. We report the case of a successfully treated patient.

CASE REPORT

A 54-year-old female patient was referred to our hospital in September 2007. She reported an intermittent upper abdominal discomfort and a weight loss of 4 kg during the previous three months. She had negative history of either acute pancreatitis or any other gastrointestinal disease. The CT scan of the abdomen, performed one month earlier in the referring hospital, showed a focal thickening of the duodenal wall.

On admission, she was free of any clinical symptoms and physical examination of the abdomen was unremarkable. Laboratory evaluation revealed increased amylase and lipase level in the serum with the values of 7.68 μkat/L and 22.0 μkat/L respectively. Abdominal ultrasonography showed an enlarged pancreatic head containing an anechoic bilocular cystic lesion 37 mm in diameter.

At ERCP, external compression of the second portion of the duodenum was observed. The ampulary orifice looked intact. Both, the pancreatic and bile ducts appeared normal with no sign of communication between the cyst and pancreatic ductal system.

Using a radial electronic echoendoscope (Olympus GF-UE160) with frequencies of 7, 8 and 10 MHz, endoscopic ultrasonography (EUS) of the pancreas from the stomach, duodenal bulb and second portion of duodenum was performed. After insertion of the instrument into the apex of the duodenal bulb, a multilocular cystic lesion with diameter of 37 mm within the pancreatic head with a single mural nodule 5 mm in diameter was revealed. Neither central calcification nor associated solid mass within the head of the pancreas were present on the EUS image. There were no internal septa within any cystic compartment and the cystic lesion was not encapsulated. The main pancreatic duct was not dilated and no clear communication between the cystic lesion and pancreatic duct could be observed. There were no signs of tumour invasion into any of the following struc-

tures: duodenal wall, portal vein, superior mesenteric vessels and common bile duct. EUS features of the pancreatic body and tail were normal. Peripancreatic lymph nodes were slightly enlarged with a diameter of up to 8 mm but no EUS criteria of malignant involvement were present (Fig. 1). Fine needle aspiration (FNA) of both – the cyst fluid and mural nodule was performed with a linear array echoendoscope (Olympus CF-UCT 140) and using a 22 Gauge needle (Olympus) under antibiotic prophylaxis (Fig. 2). A total of 9 mL of slightly opalescent low viscosity fluid was aspirated followed by the evacuation of the whole cyst content. Cyst fluid analysis revealed an amylase level of 1,597 μkat/L, lipase 12,618 μkat/L, carcinoembryonic antigen (CEA) 3 ng/L and carbohydrate antigen 19–9 (CA 19–9) 3,027 U/mL. Microscopic evaluation of the smears showed malignant cells, leading a cytopathologist to suppose a diagnosis of adenocarcinoma (Fig. 3).

The patient underwent surgical resection with hemiduodenopancreatectomy sec. Whipple. Neither malignant lymph nodes nor distant metastasis were observed on surgery and an R0 resection was carried out. The macroscopically resected specimen contained a pancreatic head 60 mm in diameter. Within the head of the pancreas, there was a neoplastic lesion 37 mm in diameter consisting of many irregular split-like and cystic spaces filled with serous fluid. On microscopic examination, the cytologic neoplastic compartment consisted of clear and epitheloid cells (partly spindling) with limited spreading, strictly within periductal spaces of the pancreatic ductal system. A non-encapsulated tumour created a definite slit-like and (true) cystic neoplastic architecture consistent with the diagnostic conclusion: epithelioid/clear cell leiomyosarcoma, low grade malignancy, regarding a mild degree of cellularity and nuclear/cellular atypia, absence of coagulative necroses and a range of 10 to 20 mitoses per 10 HPF (Fig. 4). Immunohistochemistry was negative for cytokeratins, EMA, CEA, for S-100 and melanocytic markers, negative for MUC-1, MUC-2, for BCL-2, CD117 (c-kit) and CD99, positive for all commercially available smooth muscle specific antigens, namely smooth muscle actin, calponin, h-caldesmon, smooth muscle myosin heavy chain, desmin and vimentin (Fig. 5). A total of 13 lymph nodes were examined without any sign of metastasis.

The postoperative course was uneventful and the patient is doing well during the follow-up period of 10 months.

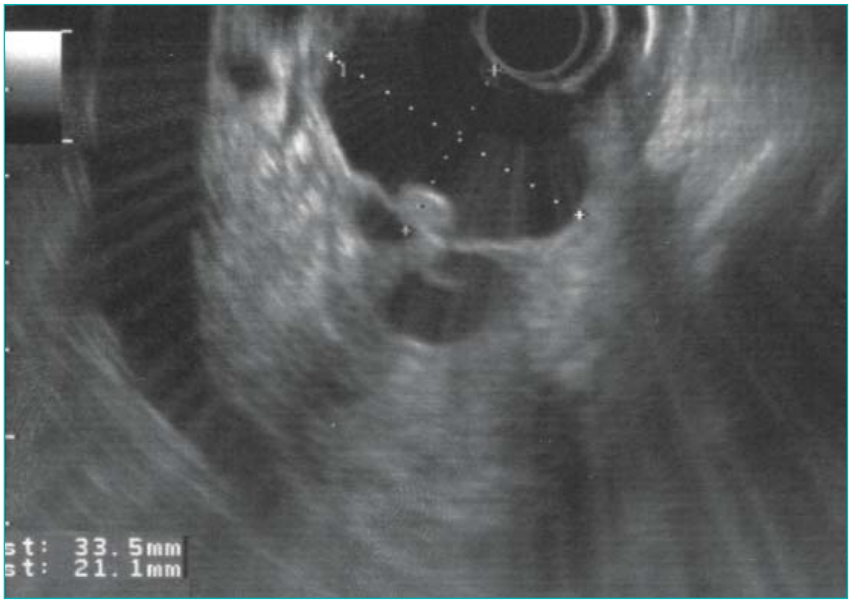

Fig. 1.
Endosonography from the duodenal bulb. Cystic lesion with septae and mural nodule within the head of the pancreas. The largest cystic space is marked with cursors.

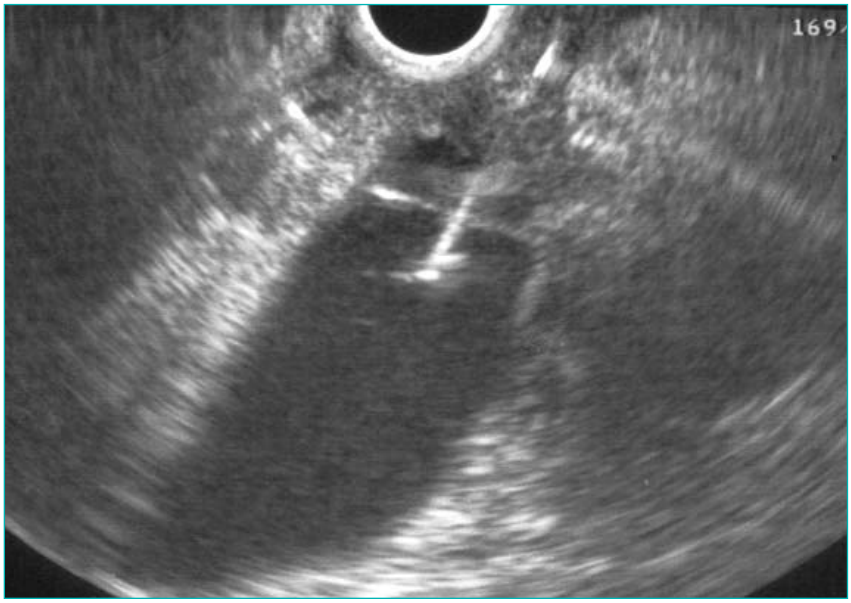

Fig. 2.
Fine needle aspiration of the same lesion as on Fig. 1.

DISCUSSION

The morphologic features of cystic pancreatic lesions overlap considerably. The differential diagnosis is wide and includes true cysts, pseudo-

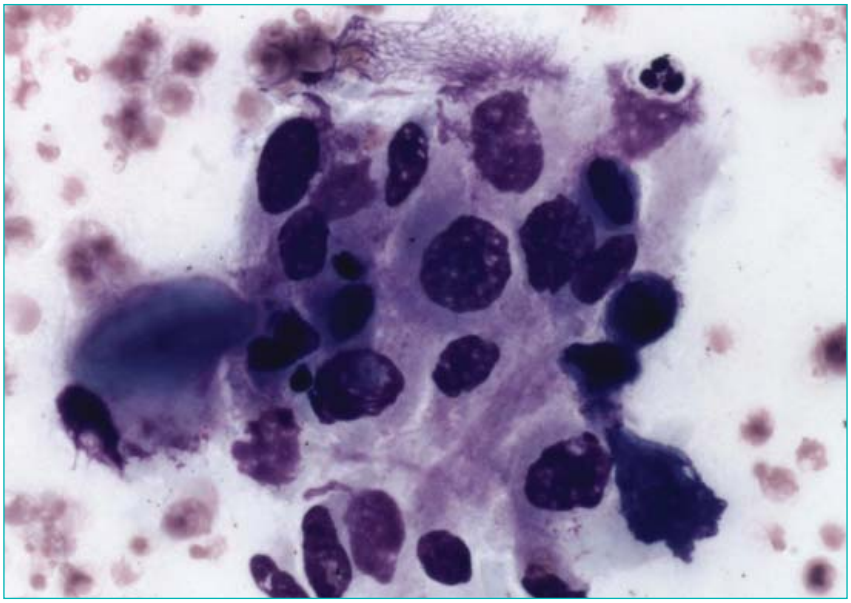

Fig. 3.
Epithelioid leiomyosarcoma of the pancreas. Cytology mimicking adenocarcinoma. May-Gruenwald-Giemsa staining, magnification 400×.

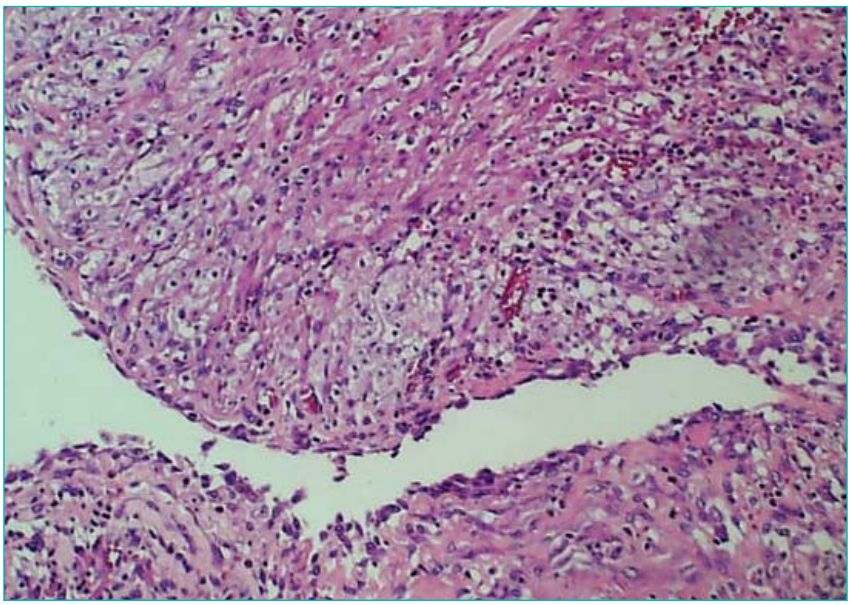

Fig. 4.
Epithelioid leiomyosarcoma of the pancreas, cystic, low grade. Pericystic neoplastic propagation. Haematoxylin-eosin staining, magnification 100×.

cysts and cystic neoplasms. The neoplasms could be of epithelial, exocrine, endocrine or mesenchymal origin. Several types of neoplasia belong to the cystic epithelial tumours of the pancreas: serous cystadenoma, mucinous cystic neoplasm, intraductal papillary mucinous neoplasm (IPMN) and ductal adenocarcinoma with cystic degeneration. Acinar cell carcinoma is of exocrine origin whereas cystic neuroendocrine tumour originates in endocrine pancreatic tissue. Mesenchymal cystic tumours include sarcoma, lymphoma and cystic lymphangioma. Moreover, some cystic tumours, such as solid pseudopapillary tumour, giant-cell tumour, pancreaticoblastoma and cystic teratoma, are of unknown or mixed origin [3].

Primary leiomyosarcoma of pancreatic origin is an extremely rare tumour. Maarouf et al [5] reported a total of 39 cases taken from the literature, of which only 5 had a cystic appearance. They had a variable clinical course with reported survival after surgery ranging from 9 months to 20 years. Among the 29 cases reported with sufficient details, 13 were limited to the pancreas, 5 showed evidence of regional extension and 11 were metastatic [5].

Preoperative differential diagnosis of cystic pancreatic tumours is based on clinical criteria such as gender, age, abdominal mass symptoms and palpable mass on physical examination, together with imaging studies, laboratory and cytology evaluation.

Physical examination was unremarkable in the presented case probably due to the relatively small tumour size. The maximum diameter of the tumour in the reported cases was within the range of 3–8 cm.

The CT scan was inconclusive in our case, showing just unspecific duodenal wall thickening. Srivastava et al [8] reported on an abdominal CT scan appearance of a total of four patients with pancreatic leiomyosarcoma. The appearance was that of a predominantly homogenous, large, solid, enhancing mass with few areas of necrosis on CT scans of three cases. A cystic appearance with thickened and nodular enhancing wall was observed in the remaining case. The authors also reported that a combination of a large diameter, greater vascular enhancement and absence of biliary dilatation should suggest leiomyosarcoma [8].

We considered a MR imaging examination unnecessary in our case. Paciorek et al [7] reported the appearance of solid leiomyosacroma on MR imaging. The unenhanced T1 weighted and T2 weighted images were the most useful in specifying leiomyosarcoma localisation, whereas the enhanced images actually obscured the tumour within the pancreas, and therefore, differentiation from the much more commonly occurring ductal adenocarcinoma was impossible [7].

A positron emission tomography is not available at our institution and was not considered useful in this case. Increased metabolic activity in the tumour area demonstrated by 18F-fluorodeoxyglucose positron emission tomography scan was described by Machado et al [6].

EUS has been reported particularly valuable in evaluation of pancreatic cystic lesions. On the basis of EUS appearance we suspected malignant cystic tumour. The thick septations and protruding mural nodules have often been described as features occurring predominantly in malignant cystic lesions [2]. The reported accuracy of EUS in distinguishing benign from malignant lesions on imaging alone varies within the range of 40 to 90%. To further confirm diagnosis, FNA was performed. Upon laboratory evaluation of the cystic fluid, a combination of high amylase and lipase levels, high CA 19–9 and low CEA levels was inconclusive [9]. Nevertheless, a cytology examination proved to be valuable in suggesting a malignant lesion. On the basis of cell appearance, the cytologist suspected a diagnosis of adenocarcinoma.

Since the specificity of cytology in most studies approaches 100%, the differential diagnosis could be focused on malignant cystic tumours only. The location in the pancreatic head, the absence of mucin and low cystic fluid CEA testified against mucinous cystadenocarcinoma. An IPMN was not considered likely because of female gender, lack of communication with the pancreatic duct and non-typical grape-like appearance of IPMN [4]. Therefore, the most likely preoperative diagnosis in our case was ductal adenocarcinoma with cystic degeneration. In the literature, centrally necrotic invasive ductal adenocarcinoma of the pancreas presented clinically as macrocystic lesion, has been described by Adsey et al [1]. The final diagnosis of cystic epithelioid leiomyosarcoma could only be confirmed postoperatively.

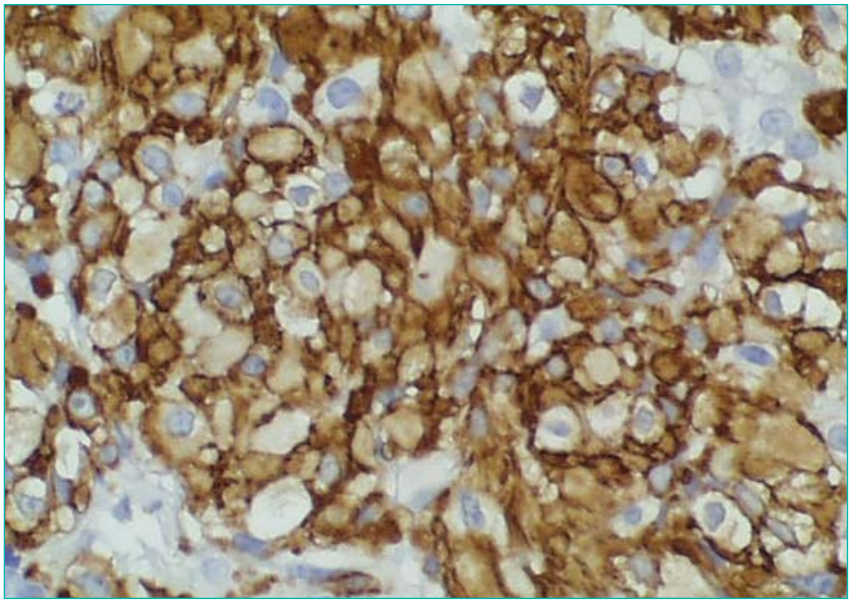

Fig. 5.
Epithelioid leiomyosarcoma of the pancreas, cystic, low grade. Membranous immunohistochemic expression. Immunohistochemistry, anti-smooth muscle actin, magnification 400×.

This case shows that cystic leiomyosarcoma should be included in the differential diagnosis of cystic pancreatic lesions. Its epithelioid variant should be taken into consideration despite cytology mimicking adenocarcinoma.

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