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CASE REPORT

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Osteoclast-like giant cell tumour of the pancreas presenting as a pseudocyst-like lesion

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Abstract A 57-year-old male patient presented with a cystic lesion in the tail of the pancreas, which was considered to be a pseudocyst. He was treated by cystojejunostomy but one year later a tumour was found to have invaded the stomach and jejunum. This was an osteoclast-like giant cell tumour containing a small area of typical ductal adenocarcinoma. Immunohistochemical staining revealed that the pleomorphic tumour cells were positive for cytokeratin, epithelial membrane antigen, vimentin and the proliferation marker MIB-1. The osteoclast-like giant cells and some small histiocytic cells stained for leukocyte common antigen and histiocytic markers and were negative for MIB-1. At autopsy, tumour rests were found in the pancreas but there were no metastases. Osteoclast-like giant cell tumours of the pancreas may present as cystic lesions and should be included in the differential diagnosis of pseudocysts.

Key words Osteoclast-like giant cell tumour · Pancreas · Cystic lesion · Immunohistochemistry

Introduction

Osteoclast-like giant cell tumours of the pancreas usually present as a large mass in the head [11, 12]. Histologically, they are composed of a neoplastic and a non-neoplastic cell population; the neoplastic cells are pleomorphic, but often spindle-shaped or ovoid and the non-neoplastic cells are multinucleated osteoclast-like giant cells. Occasionally, the tumour may show a focus of ductal adenocarcinoma [12]. Although very rare, knowledge of this tumour is necessary to avoid diagnostic difficulties, especially in frozen section diagnosis. We describe our experience with an osteoclast-like giant cell tumour which originally presented as a cystic lesion imitating a pancreatic pseudocyst.

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Case report

A 57-year-old male patient had undergone partial gastrectomy for peptic ulcer disease in 1981. In the summer of 1994, he developed acute upper abdominal pain. Ultrasound and CT revealed a cystic lesion in the distal pancreas and he was operated for suspected chronic pancreatitis with pseudocyst formation. The examination of frozen sections resulted in the diagnosis of granulation tissue compatible with the margin of a pseudocyst and a pseudocystojejunostomy was performed. For about a year, the patient did quite well with no clinical progression of disease. In summer 1995, recurring upper abdominal pain again led to admission to hospital. On gastroscopy, a tumour was seen to have infiltrated the stomach, and the patient underwent major surgery with left pancreatic resection, resection of the gastroenteral anastomosis and the pseudocystojejunostomy, and splenectomy. Two weeks after the operation, the patient died in haemorrhagic shock due to the rupture of a retroperitoneal hematoma into the small bowel, with massive intestinal bleeding.

Materials and methods

During the first diagnostic surgical procedure, intraoperative frozen sections were performed with routine hematoxylin and eosin (H&E) staining. The specimen removed during the operation was fixed in 4% buffered formalin and routinely processed for paraplast embedding. 4 μm sections were cut for histochemical stains including H&E, periodic acid-Schiff, silver impregnation according to Gomori and tartrate resistant acid phosphatase. Using the avidin-biotin complex method with DAB as chromogen, immunoperoxidase staining was performed with the following antibodies: carcinoembryonic antigen (working dilution 1:500), vimentin (1:25), S-100 protein (1:250), alpha 1-antichymotrypsin (1:500), leukocyte common antigen (1:25), epithelial membrane antigen (1:50), alpha-fetoprotein (1:100), beta-human chorionic gonadotropin (1:200), CD 68 (1:100), CD 31 (1:20; all from Dako, Hamburg), MIB-1 (Ki 67 antigen; 1:1), pan-cytokeratin (Kl 1; 1:100; both from Dianova, Hamburg), chromogranin A (1:1; Camon, Wiesbaden).

Results

The tissue specimen submitted during the first operation in 1994 showed large multinucleated giant cells with intermingled smaller spindle and round cells. No residual pancreatic tissue was found. Together with the description of a cystic lesion, the findings in the intraoperative frozen sections were interpreted as the margins of a pancreatic pseudocyst with histiocytic giant cell reaction (Fig. 1).

The surgical specimen from the operation in summer 1995 contained a partly necrotic and cystic tumour adherent to the splenic hilum with a diameter of 11.5 cm infiltrating the gastric and the jejunal wall (Fig. 2). Macroscopically, no normal pancreatic tissue could be detected. Histologically, the tumour was composed of undifferentiated spindle shaped to ovoid cells intermingled with osteoclast-like giant cells. Only the small pleomorphic cells showed a moderate amount of mitoses. In addition, there was a small area of moderately differentiated tubular adenocarcinoma next to a few residual pancreatic ducts (Fig. 3).

Immunohistochemically, the pleomorphic tumour cells stained for the cytokeratin marker Kl-1 and epithelial membrane antigen, but also for vimentin. With the exception of the small adenocarcinomatous area, the tumour cells did not react with antibodies to carcinoembryonic antigen. Tartrate resistant acid phosphatase which is a typical histochemical marker for osteoclasts was detected in all the multinucleated giant cells and also in some of the smaller mononuclear cells (Fig. 4); the same is true for the histiocytic marker CD 68. Using the proliferation marker MIB- 1, the multinucleated giant cells stained negative in contrast to the positive tumour cells (MIB-1 positive in about 30%) which constitute the proliferative compartment (Figs. 5,6). Some mononuclear and all osteoclast-

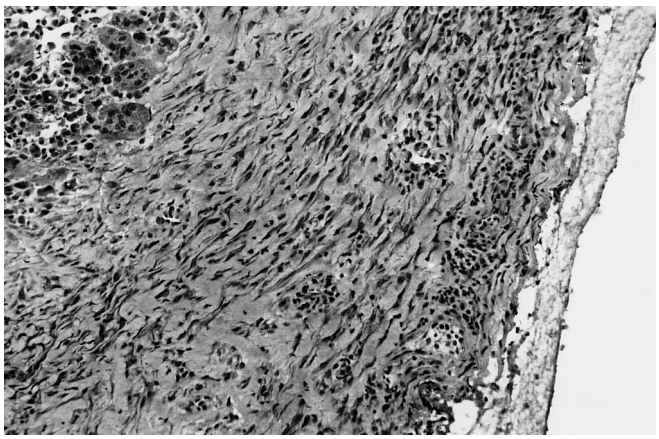


Fig. 1 After intraoperative information of a cystic lesion of the pancreas, primary frozen section diagnosis of a pancreatic pseudocyst with histocytic giant cell reaction was made. H&E, ×200

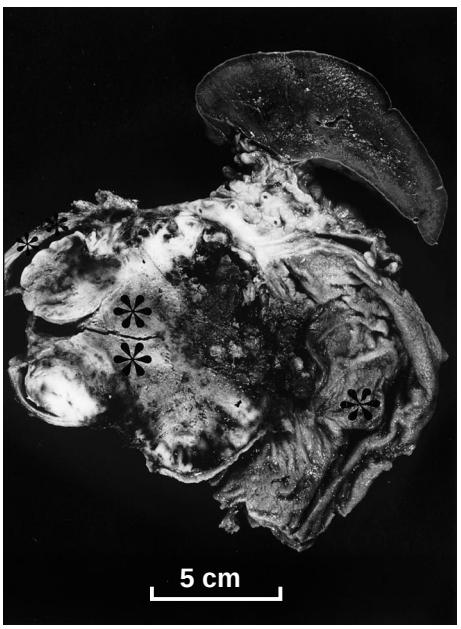


Fig. 2 Surgical specimen of partly necrotic and cystic osteoclast-like giant cell tumour (* *) involving stomach (*) and jejunal walls (small **). No residual pancreatic tissue was visible

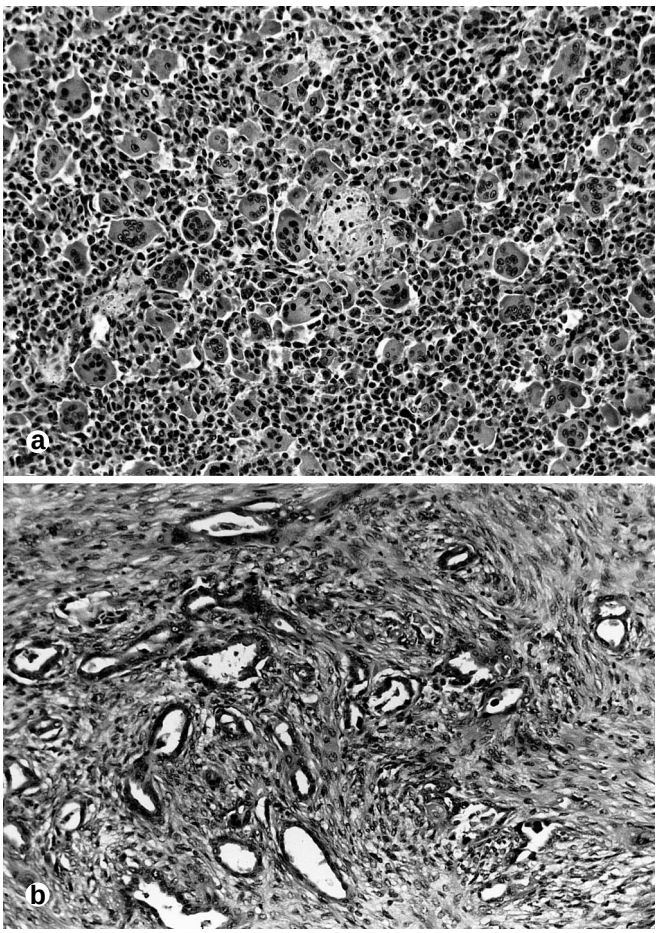
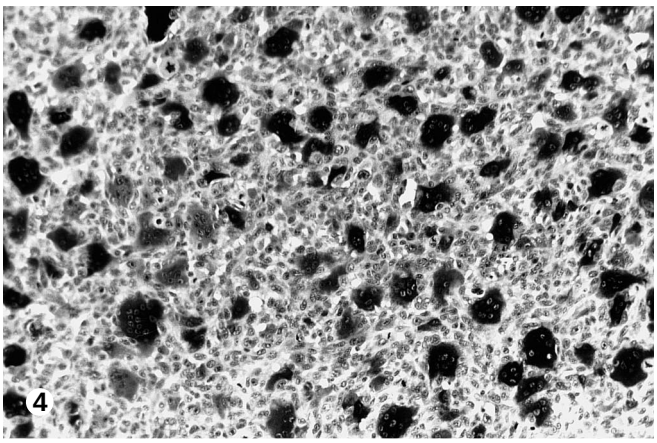
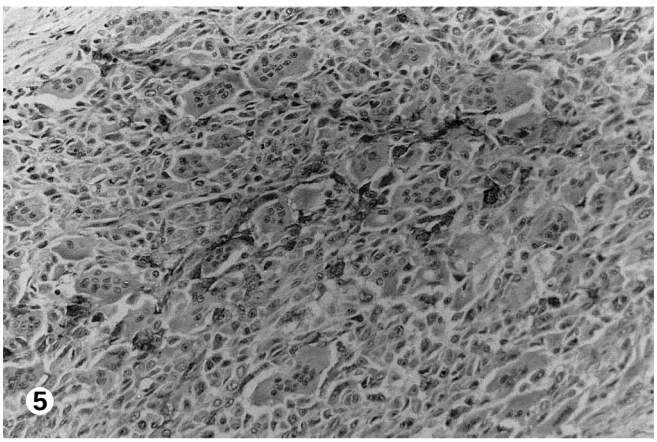


Fig. 3a, b Osteoclast-like giant cell tumour with small carcinomatous component. **a** Giant cell component H&E, ×200. **b** Adenocarcinoma component H&E, ×200





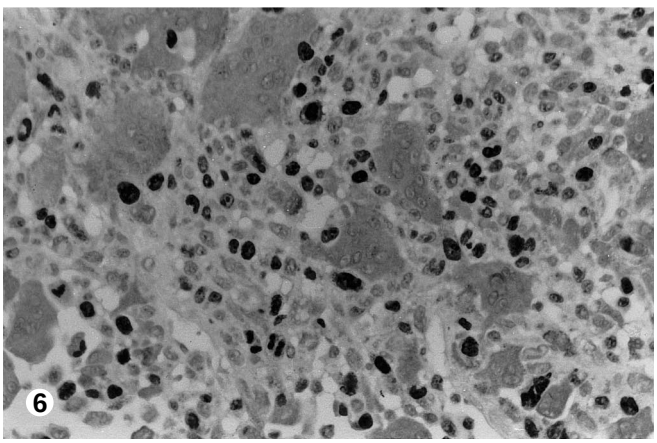


Fig. 4 Staining of osteoclast-like giant cells and some mononuclear cells with tartrate-resistant acid phosphatase ×200

Fig. 5 Keratin immunoreactivity in tumour cells. No reaction in giant cells. Kl 1, ×260

Fig. 6 MIB-1 immunoreactivity of nuclei of tumour cells. Lack of nuclear reaction in giant cells. ×350

like cells reacted positively with antibodies against leukocyte common antigen and alpha-1 antichymotrypsin (Table 1). The findings were the same in the primary biopsy and in the secondary surgical resection material.

At autopsy, only small rests of the tumour were found in the tail of the pancreas. A large retroperitoneal haematoma was detected which had penetrated the jejunum with lethal intestinal bleeding. There were no metastases.The final pathological diagnosis was “osteoclast-like giant cell tumour of the pancreas with a small adenocarcinomatous component”.

Discussion

This case report describes an osteoclast-like giant cell tumour of the pancreas with unusual cystic degeneration. At the initial presentation of the patient, the lesion was misinterpreted as pancreatic pseudocyst with a foreign body giant cell reaction at the margin. Only later, when neoplastic invasion of the stomach led to a complete surgical resection of the lesion, was the correct diagnosis of an osteoclast-like giant cell tumour made. This was based on the demonstration of both cytokeratin and vimentin positive small pleomorphic tumour cells, intermingled with cytokeratin negative multinucleated giant cells staining for the histiocytic marker CD 68.

The differential diagnosis of cystic lesions of the pancreas includes pancreatic pseudocyst as the most common change and cystic tumours such as serous and mucinous cystic tumour, solid and pseudopapillary tumour, intraductal papillary mucinous tumour and acinar cell cystadenocarcinoma. Our case shows that an osteoclast-like giant cell tumour may also occasionally present as a cystic lesion and has therefore to be considered in the differential diagnosis of cystic changes of the pancreas. Similar cases were reported by Dworak and collaborators and by Scott, which indicates that cystic changes may not be rare in osteoclast like giant cell tumours at this site [4, 16].

The separation of an osteoclast-like giant cell tumour from a pseudocyst or other tumours of the pancreas which may form a cyst, is based on the demonstration of non-neoplastic osteoclast-like giant cells on the background of neoplastic undifferentiated spindle-shaped to ovoid cells which may include a focus of ductal adenocarcinoma [1, 10]. They may also arise in the wall of a mucinous cystic tumour [15]. In our case, the tumour also contained a focus of ductal adenocarcinoma, but showed no association with a pre-existing mucinous cystic tumour.

Osteoclast-like giant cell tumours are extremely rare. The presented case included, 44 cases have been published [1–14]. They are usually located in the pancreatic head and have no sex preference (male: female ratio about 1:1) [5, 10]. Metastases develop only in about 50% of cases, but gross invasion into adjacent organs is frequent.

The prognosis of these rare tumours is extremely variable. In a series of 11 cases the mean survival time was 12 months from the date of diagnosis [4, 10], but survival of up to 15 years has also been reported. Because of these biological peculiarities and their variable phenotypic appearance, the new WHO classification separates this type of tumour from the ductal adenocarcinoma and its variants [10].

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