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Osteoclast: like giant cell undiferrentiated pancreatic tumor diagnosed by means of EUS guided FNA

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Abstract. *Objective:* Osteoclast-like giant cell tumours are rare abdominal malignant neoplasms mainly arising in the pancreas. Because of their rarity, clinical and cytopathology reports are very limited, and sonographic features have not been clearly specified; these tumors are easily misdiagnosed by ultrasound as mucinous cystic tumors (MCTs) or solid pseudopapillary neoplasms (SPNs)**.** *Case study:* We report a case of osteoclast like giant cell tumor arising in the pancreas of an 80 year old female patient offered by EUS-FNA cytology on direct and cell block slides. A biphasic pattern composed by a malignant mononuclear cell component and a giant cell component were hallmarks to the diagnosis. *Conclusion:* Our case highlights the performance of EUS-FNA in the diagnostic approach of abdominal tumours and the significance of cell block method in the interpretation of osteoclast-like giant cell pancreatic tumour. (www.actabiomedica.it)

Key words: Undifferentiated osteoclast like giant cell pancreatic tumour, Cytology, EUS-FNA, Cell block, Immunocytology

Introduction

Undifferentiated osteoclast-like pancreatic cell tumour is uncommon and accounts for 0.2% of pancreatic carcinomas (1). Pleomorhic carcinoma, pleomorphic giant cell carcinoma, sarcomatoid carcinoma, spindle cell carcinoma, anaplastic carcinoma, undifferentiated carcinoma, and osteoclastic or pleomorphic giant cell tumour, have been alternatively used to describe this neoplasm (2). Since its first description by Rosai in 1968 (3), only few cases have been reported in the literature. Endoscopic ultrasound (EUS) guided fine needle aspiration (FNA) cytology along with immunocytology applied on cell block preparations have allowed definite diagnosis of pancreatic tumours. Material adequacy, neoplasm morphological appearances, endoscopy management, and cytopathologist's experience upgrade interpretation efficacy (4).

Hereby we report the case of a patient with an osteoclast-like giant cell pancreatic tumour diagnosed by means of EUS-FNA cytology along with immunocytology applied on cell block preparations.

Case Presentation

An 80-year-old female patient presented to our institution due to jaundice and epigastric pain. Her past medical history included arterial hyperetension, cardiac arrythmia, asthma, and chronic renal failure. A computed tomography (CT) scan was performed showing a 12mm mass lesion in the pancreatic head causing obstruction of the common bile duct which was dilated. EUS was performed with a linear array echoendoscope (GF-UCT 140 Olympus Medical Europe) under conscious sedation with midazolam

and pethidine and a 3.5cm hypoechoic heterogeneous mass lesion with poorly demarcated margins was seen in the pancreatic head (Fig. 1A). EUS-guided FNA was performed with a 22-gauge needle (Expect Slimline, Boston Scientific, MA) (Fig 1B). Suction was applied during the FNA process (10ml of vacuum) and the sample was expelled into normal saline. The sample was transferred to the cytology lab immediately. Aspirated material was placed on smears and air dried and alcohol fixed slides were prepared. A cell block was made from the residual material containing tissue fragments unsuitable for processing by cytologic techniques, using the fibrin clot method and it was formalin fixed and paraffin embedded. Subsequently 5μm thick sections were obtained and stained with Hematoxylin and Eosin. Additional sections from the cell block were obtained for immunocytochemistry. Written informed consent was obtained from the patient prior to investigation.

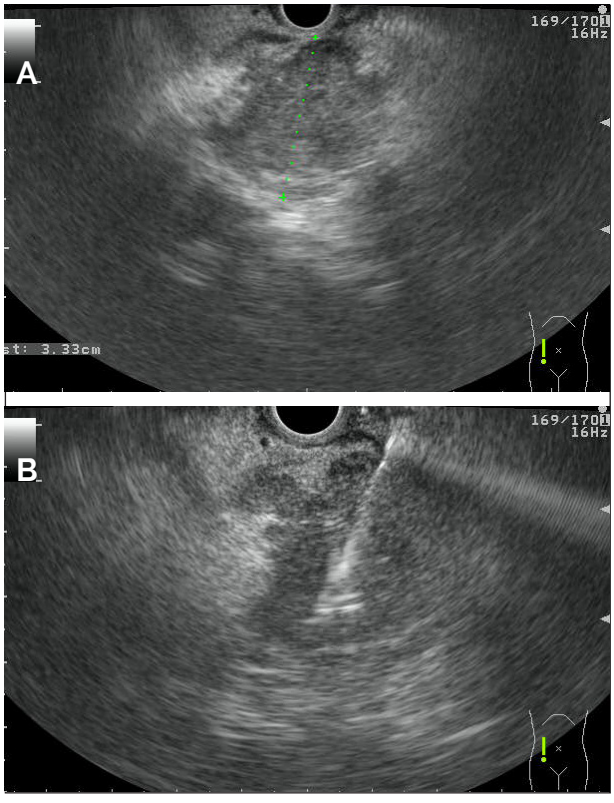

Figure 1. A Endoscopic ultrasound image of a hypoechoic lesion with irregular margins in the head of the pancreas. B Endoscopic ultrasound guided FNA from the lesion.

Cytological – immunocytological findings

EUS- FNA conventional smears and cell block smears showed atypical pleomorphic mononuclear cells admixed with multinucleated osteoclast like giant cells measuring 10 to 20 ovelapping nuclei, in the center of each cell. Nuclear membranes and chromatin pattern were regular. Ill-defined nucleoli were observed (Fig.2). The mononuclear cells were positive by cytokeratin AE1/AE3, EMA, and CEA (Fig. 3), but showed no reaction with S-100 and CD117 (c-kit). The multinucleated cells were positive by CD68 immunostain (Fig. 4). A cytological diagnosis of osteoclast-like giant cell pancreatic tumour was rendered.

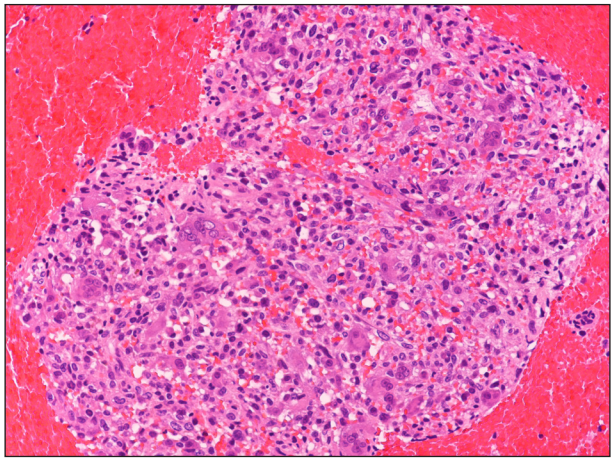

Figure 2. Osteoclast like giant cell pancreatic tumor. Cell block preparation. Hematoxylene-Eosin stain X 200.

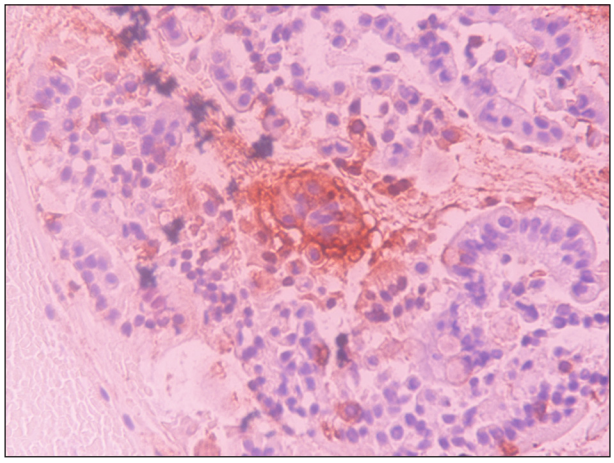

Figure 3. Osteoclast like giant cell pancreatic tumor. Cell block preparation. CEA immunostain X 400.

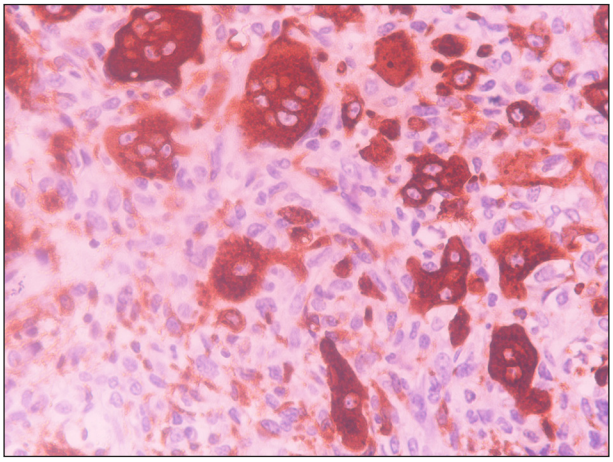

Figure 4. Osteoclast like giant cell pancreatic tumor. Cell block preparation. CD68 immunostain X 400.

Discussion

Pancreatic undifferentiated carcinoma is a rare and aggressive variant of ductal adenocarcinoma.

There are three major subtypes of undifferentiated pancreatic carcinoma that include osteoclastic-like giant cell carcinoma, pleomorphic giant cell, and mixed giant cell tumor (5-8). Osteoclast-like subtype is associated with longer survival outcome.

The neoplasm is mainly composed of 2 cellular components: osteoclast-like giant cells and mononuclear tumour cells. Its histogenesis is complicated and sometimes coexists with mucinous cystic tumours (MCTs) and pleomorphic giant cell carcinoma (PGCC). Mononuclear cells express EMA, and CK, which suggest epithelial origin, while osteoclast-type giant cells are nonneoplastic phagocytic cells that express CD68 and Vimentin suggesting a mesenchymal origin (9-12). These findings are in accordance with our case.

Clinical presentation is non specific. Epigastric or back pain, jaundice, nausea, vomiting, weight loss and itching have been described. Additionally hypercalcemia and migratory thrombosis have been reported. Also episodes of acute pancreatitis as a sign of intraductal tumor development, or signs related to gastrointesinal involvement like bleeding or stenosis, and even related to peritoneal involvement like ascites (13).

Physical examination may reveal a palpable upper abdominal mass (13). Serum levels of CA19-9 and CEA may be elevated but this is not always the case (13).

Radiological work-up includes computed tomography (CT), magnetic resonance imaging (MRI) and endoscopic ultrasound (EUS). CT shows a hypodence mass or an heterogeneous one with hyper- and hypodence areas. MRI allows a detailed and accurate morphology and nature of complex areas of the tumor. EUS also demonstrates tumor complexity, both hypo- and hyperechoic areas within the same mass. Along with fine needle aspiration (EUS-FNA) a high diagnostic accuracy standard for these tumors, has been achieved (13, 14).

Conclusion

In conclusion our case enhances the utility of EUS-FNA cytology in conjunction with immunocytochemistry applied on cell blocks, in the correct diagnosis of undifferentiated osteoclast-like giant cell pancreatic tumour.

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