Clinical Imaging 40 (2016) 148–151

Contents lists available at ScienceDirect

Clinical Imaging

journal homepage: http://www.clinicalimaging.org

Magnetic resonance imaging findings of undifferentiated carcinoma with osteoclast-like giant cells of pancreas

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ARTICLE INFO

Article history:
Received 10 May 2015
Received in revised form 13 August 2015
Accepted 15 September 2015

Keywords:
Undifferentiated carcinoma with osteoclast-like giant cells
CD68
Magnetic resonance imaging
Pancreas

ABSTRACT

Undifferentiated carcinoma with osteoclast-like giant cells is a rare pancreatic and periampullary neoplasm with less than 50 cases reported in the literature. Pathologically, this tumor mimics a giant cell tumor in bones. We report a case of undifferentiated carcinoma with osteoclast-like giant cells in a 55-year-old man presenting as a pancreatic mass with associated regional and distant lymphadenopathy. On T1- and T2-weighted images, the mass shows dark signal intensity which was atypical for a pancreatic adenocarcinoma.

1. Introduction

Undifferentiated carcinoma with osteoclast-like giant cells (UCOG) of the pancreas is a rare neoplasm comprising less than 1% of all exocrine pancreatic tumors [1,2]. Less than 50 cases of such tumors have been reported in the English literature. This neoplasm is composed of two distinct cell populations: a mononuclear cell population and osteoclastic tumor giant cells of uncertain lineage. The tumor frequently shows an inhomogeneous appearance with cystic change [1]. The pathogenesis of the tumor is still controversial. Imaging findings for this unusual tumor are seldom reported, and to our knowledge, magnetic resonance imaging (MRI) findings of this tumor have not been reported yet. In this report, we describe a case of undifferentiated carcinoma of the pancreas with osteoclast-like giant cells and imaging findings from both computed tomography (CT) and MRI.

2. Case report

A 58-year-old man presented with abdominal pain at the left upper quadrant and weight loss of 8 kg over 3 months. Results of routine laboratory examinations including tumor markers such as α-fetoprotein, carbohydrate antigen 19-9, and carcinoembryonic antigen were within normal range.

Ultrasonography (US) revealed a hypoechoic mass in the body of the pancreas (Fig. 1a). Precontrast CT scans showed a 5×5-cm mass lesion arising from the body of the pancreas with subtle high attenuation at the periphery (Fig. 1b). The mass showed heterogeneous and subtle enhancement, and the margin of the tumor was well defined after contrast administration (Fig. 1c). The wall and peripheral portion of the tumor was slightly enhanced. There were a few enlarged lymph nodes in the paraaortic and aortocaval area and along the mesenteric vessels. Parenchymal atrophy and pancreatic ductal dilatation were noted in the distal part of the pancreas.

MR examination was performed with a 3-T MR unit (Verio, Siemens, Germany), and the enhancement was performed utilizing gadobutrol (Gadovist, Bayer, Germany). On precontrast T1 -and T2-weighted images (Fig. 1d and e), the mass showed inhomogeneous, low-to-dark signal intensity. The peripheral part of the tumor showed a darker signal area, and slightly higher signal intensity was observed in the central part of the tumor on T2-weighted images. Also, the tumor demonstrated low-level enhancement after contrast on the arterial, portal venous, and delayed phase (Fig. 1f, g, and h). Diffusion restriction was not noted (Fig. 1i).

Endoscopic US-guided biopsy was performed, and immunohistochemical examination showed positive staining for vimentin, CD68, p53, and alpha antitrypsin and focal staining by pancytokeratin and

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http://dx.doi.org/10.1016/j.clinimag.2015.09.013
0899-7071/

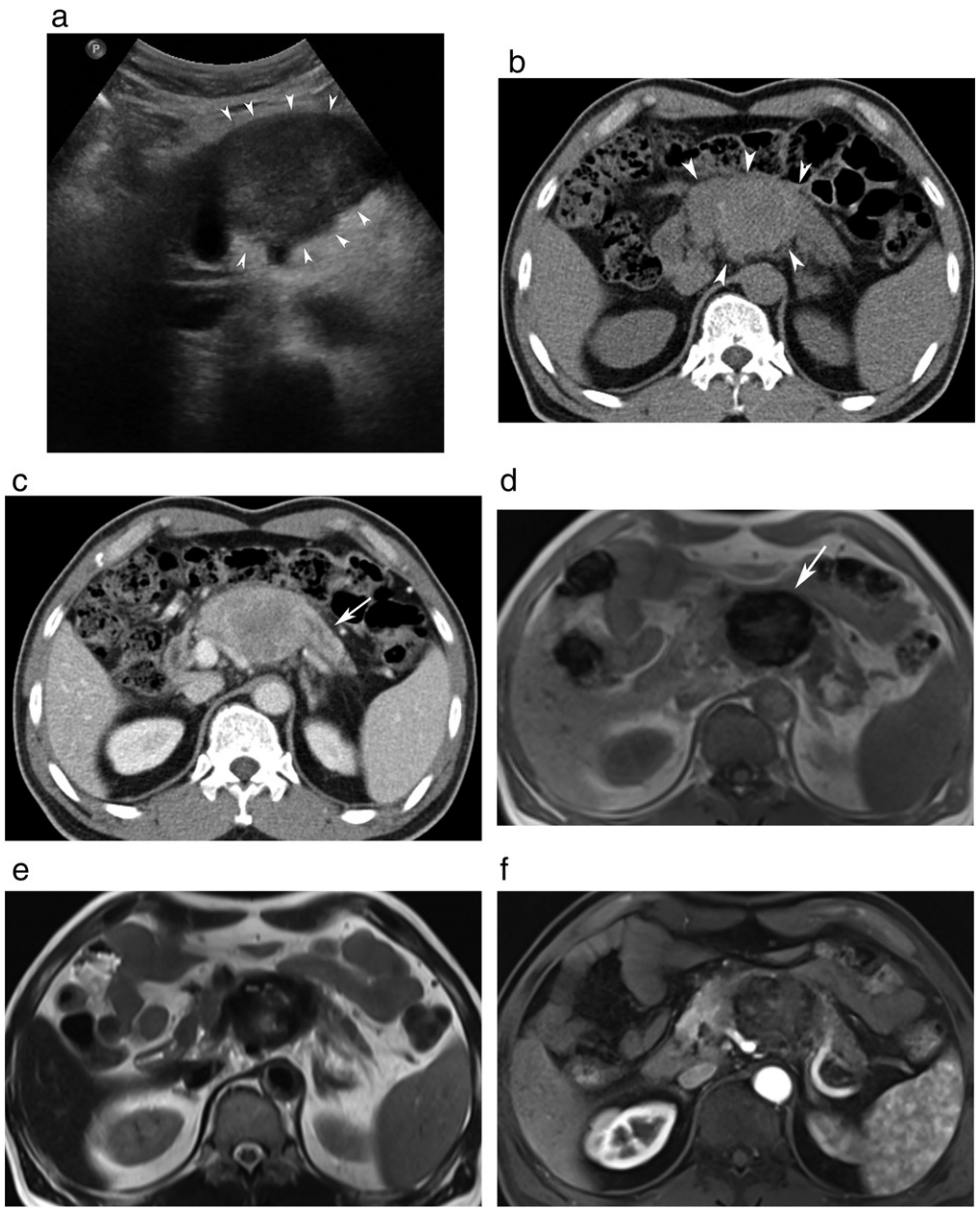

Fig. 1. A 55-year old man with a pancreatic body mass. (a) Ultrasonography reveals a 5-cm hypoechoic mass (arrowheads) in the body of the pancreas. (b) Precontrast CT scan shows a subtle hyperattenuated mass (arrowheads) in the body of pancreas. (c) The mass shows heterogeneous enhancement after contrast enhancement on portal venous phase. Atrophied pancreatic tail with ductal dilatation is also noted (arrow). (d) On T1-weighted image, the signal intensity of the mass (arrow) was low, and the peripheral part of the tumor shows darker signal intensity than the central part. The margins of the mass are well circumscribed. (e) On T2-weighted image, the mass shows dark signal intensity; some focal areas with higher signal intensity were also noted, which are probably due to areas of necrosis. (f) After contrast injection, the mass demonstrates mild enhancement on arterial (f), portal venous (g), and delayed phase (h). (g) After contrast injection, the mass demonstrates mild enhancement on arterial (f), portal venous (g), and delayed phase (h). (h) After contrast injection, the mass demonstrates mild enhancement on arterial (f), portal venous (g), and delayed phase at 180 s (h). (i) Diffusion-weighted image with *b*-value of 500 reveals no diffusion restriction. This is probably caused by absence of signal intensity for the mass on T2-weighted images. (j) After surgical resection, a 54×48-mm mass was found. The cut surface of gross specimen delineates tan-brown color, which is unusual for adenocarcinoma. (k) A hematoxylin-and-eosin-stained section shows mononuclear and osteoclast-like giant cells closely resembling giant cell tumor of the bone.

CD10. With these results, the pathological diagnosis was solid pseudopapillary neoplasm or sarcomatoid carcinoma of the pancreas.

Surgical resection (radical anterograde modular pancreatosplenectomy) was performed, and a 5.4×4.8-cm pancreatic mass abutting the common hepatic artery as well as encasement of the splenic artery and vein was found in the operative field.

On the cut section of the gross specimen, the tumor was tan-brown colored and showed focal necrosis and hemorrhage (Fig. 1j). Histologically, the tumor was composed of two major cell types: atypical mononuclear round cells and abundant osteoclast-like multinucleated giant cells with central nucleoli (Fig. 1k). The osteoclast-like giant cells lacked features of atypia and occasionally showed phagocytosis of the atypical cells. An immunohistochemical examination showed positive staining for vimentin, CD68, p53, and alpha antitrypsin and focal staining by pancytokeratin. The final pathological diagnosis was an UCOG of the pancreas.

3. Discussion

UCOG of the pancreas, formerly known as osteoclast-like giant cell tumor, is a rare neoplasm of the pancreas and comprises less than 1% of nonendocrine pancreatic tumors [1,2]. This tumor tends to occur in elderly patients with no gender predominance [2–4]. The symptoms are nonspecific, and the most common signs and symptoms are abdominal pain, a palpable mass, weight loss, fatigue, anorexia, and jaundice.