Large pancreatic lipoma in a 69-year-old diabetic woman: diagnostic considerations

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Abstract

Pancreatic mesenchymal neoplasms are very rare pancreatic tumours. One of them is pancreatic lipoma, often diagnosed incidentally. We herein report a case of a large lipoma of the pancreatic head, diagnosed by computed tomography and magnetic resonance imaging and confirmed by ultrasound-guided fine needle biopsy (FNA) biopsy. Regarding its benign character, silent clinical course and excellent prognosis of invasive surgical removal was avoided. We propose here the diagnostic and therapeutic management of these rare pancreatic tumours. Computed tomography is the most accurate method to diagnose pancreatic lipoma. Nevertheless large tumours may need confirmation by FNA in differential diagnosis of liposarcoma.

Introduction

Non-ductal pancreatic tumours account for 5–15% of all pancreatic neoplasms [1]. Among them, mesenchymal tumours are recognised in only 1–2% of cases. Most mesenchymal tumours are benign, classified according to their origin as *fibroma, lipoma, hamartoma, neurofibroma, schwannoma, hemangioma, myoma, hemangioendothelioma* or desmoid tumour [2]. Compared to ductal adenocarcinoma, the mesenchymal tumours occur more frequently in women, are evenly distributed in the pancreas, are resectable in a higher rate and have longer survival times [3]. Herein, we report a case of a large asymptomatic pancreatic lipoma, diagnosed by contrast enhanced computed tomography (CE-CT) and magnetic resonance imaging (MRI), further confirmed by cytological examination.

Case report

A 69-year-old woman with a history of type 2 diabetes mellitus, arterial hypertension and ischaemic heart disease, and having undergone radioiodine ablation of the thyroid gland, was admitted to our department for diagnosis of a tumour localised in the head of the pancreas. The tumour was revealed by abdominal ultrasonography performed as a routine examination. The patient had no symptoms except loosing 4 kg of weight in the course of a restrictive diabetic diet. Physical examination revealed obesity (body mass index (BMI) 32.2 kg/m^2). Except for high cholesterol level, the laboratory tests were in the range of reference values, including cholestatic enzymes (alkaline phosphatase, γ-glutamyl transpeptidase (GGTP) and cancer markers – particularly CA 19-9).

Abdominal ultrasonography showed the hyperechogenic normal-sized liver and stones in the gall bladder. The pancreatic mass measured 45 mm and was hypoechoic, with regular inside echoes and well-defined margins (Figure 1). No blood flow was recorded within the tumour on the colour Doppler test. Abdominal CE-CT showed adipose tissue density of the spherical mass involving the head and the uncinate process of the pancreas. The mass was homogenous and showed no contrast enhancement (Figure 2 A–C). It was surrounded by a thin rim of normally perfused pancreatic parenchyma. The main pancreatic duct was dilated to 4 mm proximally to the mass. On MRI the signal intensity of the pancreatic mass was equivalent to intra-ab-

dominal and subcutaneous fat tissue (Figure 3 A–C). The upper part of the mass modelled the extrahepatic biliary tree without its dilation, and the lower part displaced the duodenum. Imaging methods disclosed a few moderately enlarged perihilar and periportal lymph nodes with diameters of 10–13 mm. Upper gastrointestinal endoscopy did not visualise any features compatible with outside compression or infiltration of the duodenum. Generally, the CT and MR images were indicative of large lipoma of the pancreas showing weak mass effect on the neighbouring tissues. The transcutaneous ultrasound-guided fine needle aspiration biopsy (FNAB) confirmed the diagnosis, disclosing in the third sample the mature adipomatous cells with no atypia (Figure 4). The idea of surgery was abandoned due to the benign nature of the tumour and lack of clinical symptoms. The patient was advised to continue follow-up visits every 6 months.

Discussion

Lipomas are very rare pancreatic mesenchymal tumours. Until now fewer than 50 cases have been described, mostly as single case reports [4]. One exception is a report on 17 cases found in a retrospective analysis of CT and MRI studies performed in one radiological

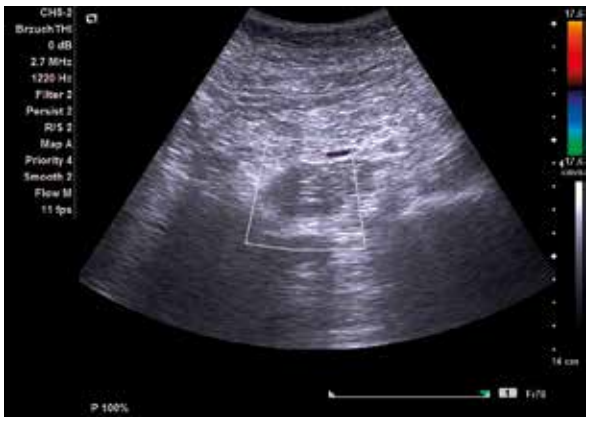

Figure 1. Abdominal ultrasonography. A homogeneous hypoechoic mass of 45 mm located in the head of pancreas, showing no blood flow on colour Doppler

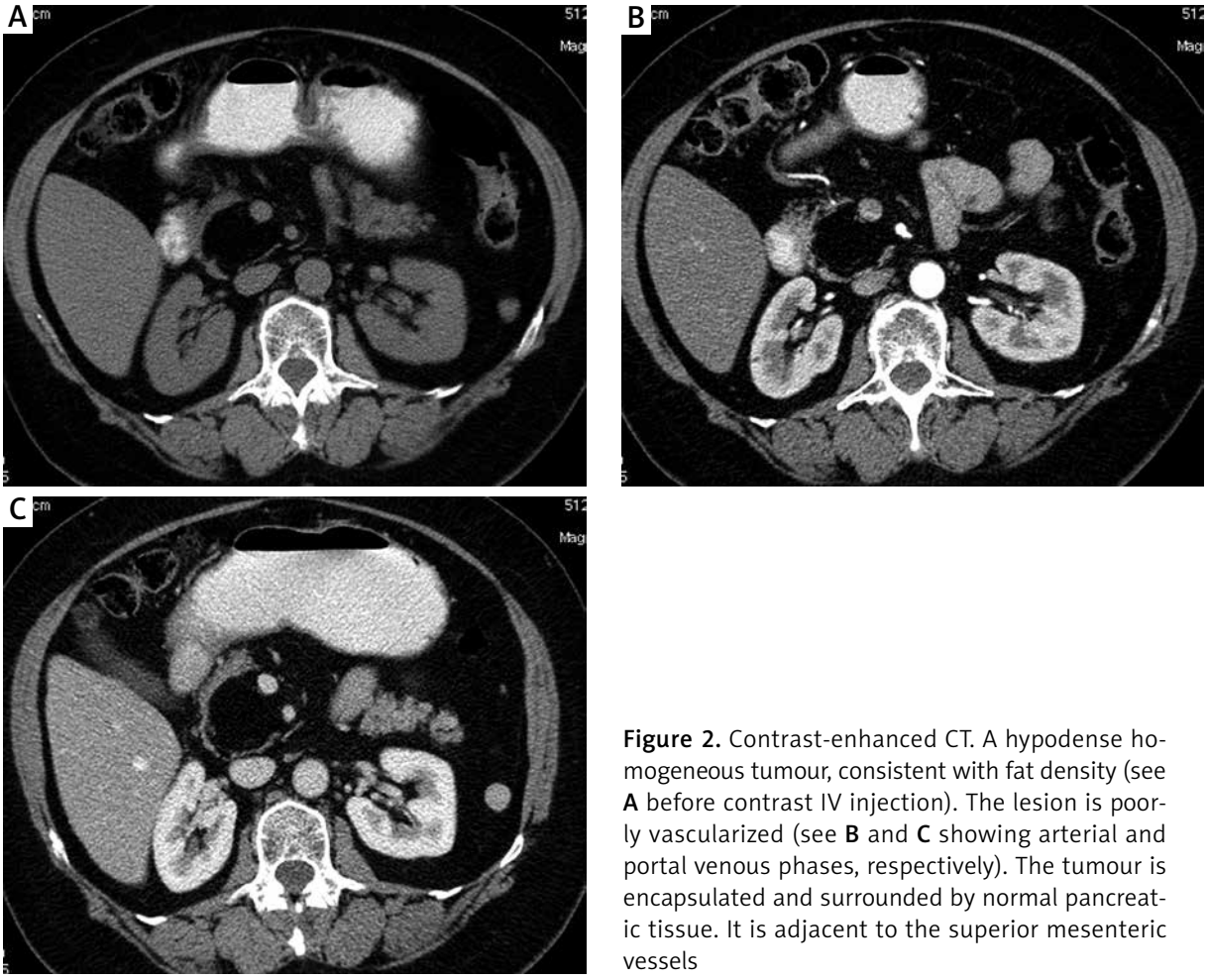

Figure 2. Contrast-enhanced CT. A hypodense homogeneous tumour, consistent with fat density (see **A** before contrast IV injection). The lesion is poorly vascularized (see **B** and **C** showing arterial and portal venous phases, respectively). The tumour is encapsulated and surrounded by normal pancreatic tissue. It is adjacent to the superior mesenteric vessels

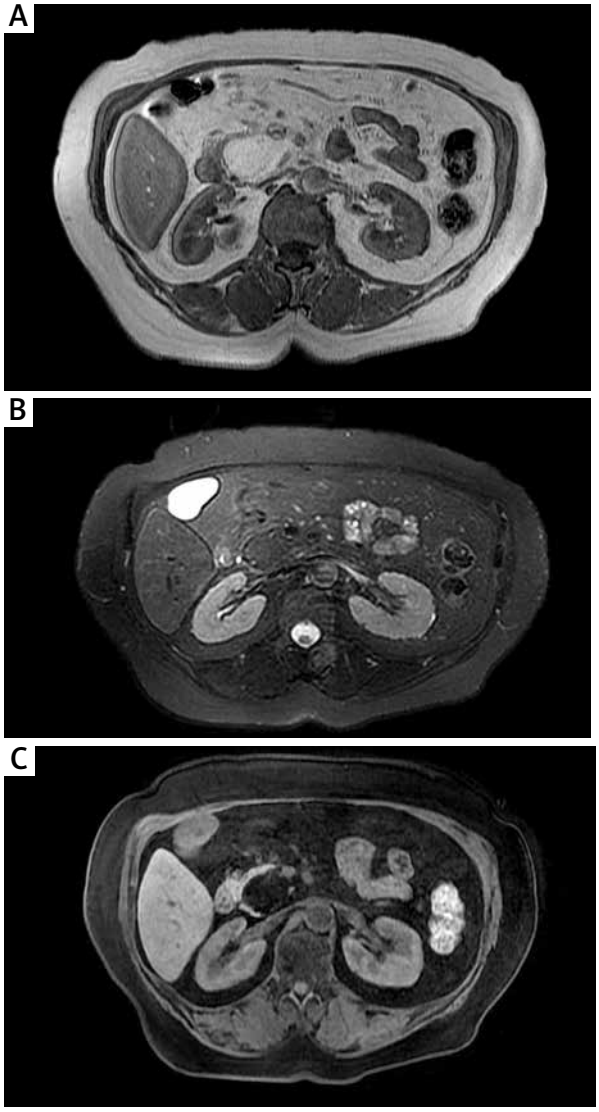

Figure 3. Magnetic resonance images. The mass of high signal intensity on T1- (**A**) and T2-weighted (**B**) axial sequences, being isointense to subcutaneous and intra-abdominal fat. Fat-supressed T2-weighted image showing low signal intensity (**C**)

centre during 2 years [5]. Because of their asymptomatic clinical course, most lipomas are discovered incidentally [4, 5]. Our patient was also referred to screening ultrasonography with no abdominal complaints. The tumour growth may be responsible for mass symptoms such as epigastric pain, jaundice, portal hypertension or acute pancreatitis [4].

Pancreatic lipomas are built of mature adipose cells, arranged in lobules and surrounded by a thin fibrous capsule separating the tumour from intact pancreatic parenchyma and peripancreatic fat. Internal septations may be seen within the tumour [6, 7]. Lipomas are

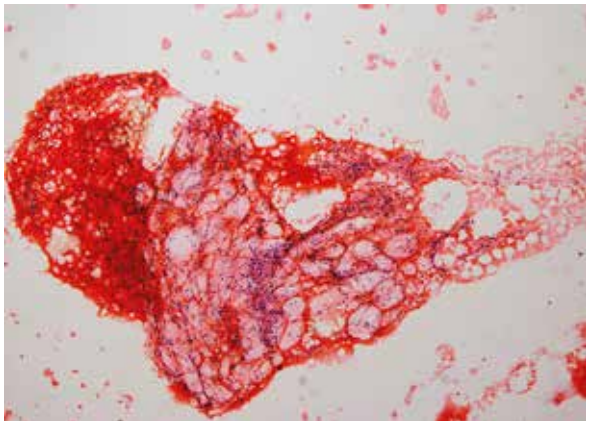

Figure 4. Histological examination reveals mature fat cells with no atypia. Staining with haematoxylin and eosin (40×)

evenly distributed in pancreatic parenchyma [4]. It is believed that lesions located in the head of the pancreas (approximately 50% of cases) arise on the early stages of embryogenesis [5, 8]. In this setting, a portion of mesenteric or retroperitoneal fat may be trapped between the dorsal and ventral buds during the integration process. Most lipomas are less than 3 cm in diameter; however, giant tumours have also been reported [9].

In differential diagnosis, other lesions originating from fatty tissue should be taken into consideration, including focal fat replacement, lipomatous pseudohypertrophy and liposarcoma [10, 11]. Focal fat replacement, known also as pancreatic lipomatosis or adipose atrophy, is commonly seen in the form of fatty tissue deposition in the pancreatic parenchyma in continuity with the peripancreatic fat [5]. A fibrous capsule, typical for lipomas, is not seen. Fat gradually replenishes the atrophic pancreas, which can be seen in histological examination as a focus of pancreatic glands dispersed between the adipose tissue [12]. Lipomatous pseudohypertrophy is characterised by enlargement of the entire pancreas, caused by hypertrophy of the pancreatic fat replacing exocrine glandular tissue with preservation of the ductal system and Langerhans islets [10]. Liposarcoma is a very rare malignant tumour of the pancreas, characterised by slow growth, low metastatic potential and progressive destruction of normal pancreatic tissue. In contrast to lipoma, the liposarcoma contains poorly defined areas of higher density on CT images [11, 13]. Male sex predominance, presence of thick septations and internal calcifications within the tumour are helpful in the differentiation of liposarcoma from lipoma [13].

Based on a literature review, the diagnosis of pancreatic lipoma was mostly done via imaging techniques such as CT, MRI or endoscopic ultrasonography (EUS) [2, 4, 5, 14]. The lipomas were solid and homogeneous

tumours, showing distinct margins and no infiltration of surrounding tissues. They had a thin fibrous capsule, with tissue density ranging from –30 to –120 HU (Hounsfield units), and showed no contrast enhancement [2, 4, 5, 10, 11]. Ultrasound cannot be the reference method to diagnose pancreatic lipomas as these tumours presented either as hypo- or hyperechoic lesions [5]. Histological diagnostics were implemented in only a few cases, usually after surgical resection of the tumour. In literature, two cases were definitely diagnosed by EUS-guided FNAB [14].

The MR imaging seems to be particularly useful for the differentiation of pancreatic lipoma from focal fat replacement [15]. Lipoma has high signal intensity on both T1-weighted and T2-weighted axial sequences, and shows a homogeneous intensity pattern comparable to intra-abdominal and subcutaneous fat. Fat-supressed, T2-weighted images show homogeneous suppression of signal intensity within the tumour. The MR images, particularly with gradient recalled echo T1-weighted sequences, reveal a clear demarcation line between the mass and the adjacent peripancreatic fat.

Positron emission computerised tomography (PET-CT) is helpful in diagnosing pancreatic lesions, but its value in the identification of pancreatic lipomas is uncertain. Generally, the lipomas do not accumulate 2-deoxy-[^{18}F]fluoro-D-glucose; however, in a single case, PET provided false positive diagnosis of malignant disease, possibly due to atypical vascularisation or the presence of brown fat in the tumour [8, 16].

Assuming the high reliability of the imaging techniques, in most cases there is no need for histological confirmation of pancreatic lipoma, particularly if small lesions are concerned. Histopathology may be needed in patients with larger tumours, where discrimination between benign and malignant lipid containing tumours is more difficult [6, 14]. In one reported case of giant pancreatic lipoma, the FNAB result was inconclusive and the patient underwent surgery [6]. In another case report, the first biopsy under EUS guidance provided insufficient material for examination and a second pass was needed [14]. In our case, three attempts were necessary to confirm the benign nature of the lesion. A possible explanation for the poor accuracy of FNAB is the resistance of adipose tissue to needle aspiration and the fact that the adipocytes may be easily damaged by routine use of formalin and alcohol solvents.

Among the published cases, only 12% of the lipomas were surgically resected [4]. Taking into account the benign nature and lack of clinical manifestation, most cases can escape surgical management. Surgery is only indicated in patients with symptoms resulting from the compression of the biliary tree, pancreatic duct or adjacent large vessels and in cases when the malignancy cannot be excluded. Since lipomas are encapsulated lesions, enucleation is a recommended procedure, but in some cases distal pancreatectomy or Whipple's procedure may be necessary.

In a published case report on 11 patients, the follow-up periods ranged from 3 to 72 months and no progression of the disease was found [4, 5]. Our patient has been under surveillance for 6 months with no change in tumour size.

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