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Case Report

Liposarcoma within uncinate process of pancreas revealing valuable multidisciplinary therapy: a case report and review of the literature

Jing-Yong Xu[1], Jun Du[2], Tan Guo[3], Jian Chen[1]

Departments of [1]General Surgery, [2]Pathology, [3]Radiology, Beijing Hospital, National Center of Gerontology, Beijing, China

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Abstract: Primary liposarcoma is an extremely rare mesenchymal tumor in the pancreas other than adenocarcinoma with different biological behavior. The present paper reports such a rare case who was a 69-year-old male. After the onset of gradually exacerbating right quandary stomachache and referred back pain, computed tomography (CT) examination revealed a mass located in the uncinate process of pancreas which was near several important vessels such as inferior vena cava, superior mesenteric vein and artery, common hepatic artery and its origination at celiac trunk and judged to be borderline resectable. after a multidisciplinary consultation, he was implemented with Whipple's procedure with total mesopancreatic excision to reach R0 margins and adequate lymphadenectomy. The pathologic result showed liposarcoma with three subtypes. Then postoperative adjuvant chemo and radiotherapy were carried out. While reporting this rare case, we also reviewed the cases published and made a conclusion of the features, aiming at improving our understanding of pancreatic liposarcoma so that we can make accurate diagnoses and treatment.

Keywords: Liposarcoma, uncinate process, pancreas, multidisciplinary therapy (MDT)

Introduction

Liposarcoma is a rare type of cancer which is of fat cell origin. It is considered as soft tissue sarcoma accounting for up to 18% of all mesenchymal malignancies. Liposarcoma tends to affect adults between the ages of forty to sixty, though it can occur at any age. Most pancreatic tumors arise from cells of epithelium, and non-ductal tumors account for 5%-15% and mesenchymal tumors account for only about 1%. Fat-originating tumors including lipoma and liposarcoma are the rarest [1-3]. Only nine cases of liposarcoma were reported since 1979 among which six were in the English literature. Here, we present an additional case which is the first case that originated from the uncinate process and has received Whipple's procedure. Meanwhile, relevant medical literatures on the subject are reviewed.

Case report

The patient was a 69-year-old man admitted to the Department of General Surgery, Beijing Hospital (Beijing, China) in January 2017 with gradually exacerbating right quandary stomachache and referred back pain without obvious weight loss. Physical examination indicated mild epigastric pain and no jaundice was found. The patient had a history of hepatitis B for more than 30 years without regular monitoring and treatment. He was newly diagnosed with hypertension and received routine administration of perindopril. The patient was allergy to sea food and had a history of smoking for more than 50 years with about 10 cigarettes a day. No cancer related family history existed.

Available laboratory examinations had reported normal liver function tests (alanine aminotransferase, γ-glutamyl transferase, alkaline phosphatase, total, direct and indirect bilirubin) and unremarkable complete blood count, renal function and electrolytes. The serum levels of carcinoenbryonic antigen (CEA), carbohydrate antigen 19-9 (CA 19-9), CA 125 and α-fetoprotein were all within the normal range.

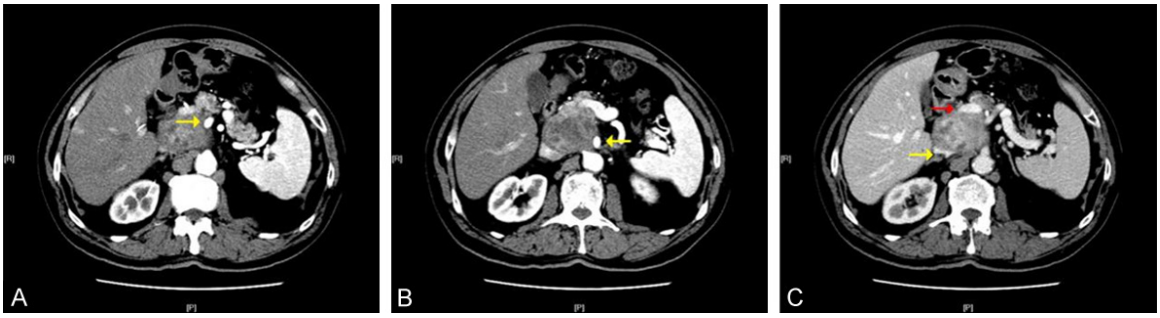

Figure 1. Abdominal CT scan shown the relationship between the mass and vessels. A and B. Showed the common hepatic artery (yellow arrow) and superior mesenteric artery (yellow arrow) were nearly half wrapped. C. Showed the close attachment between the tumor and portal vein (red arrow) and the inferior vena cava was severely compressed or invaded by the tumor.

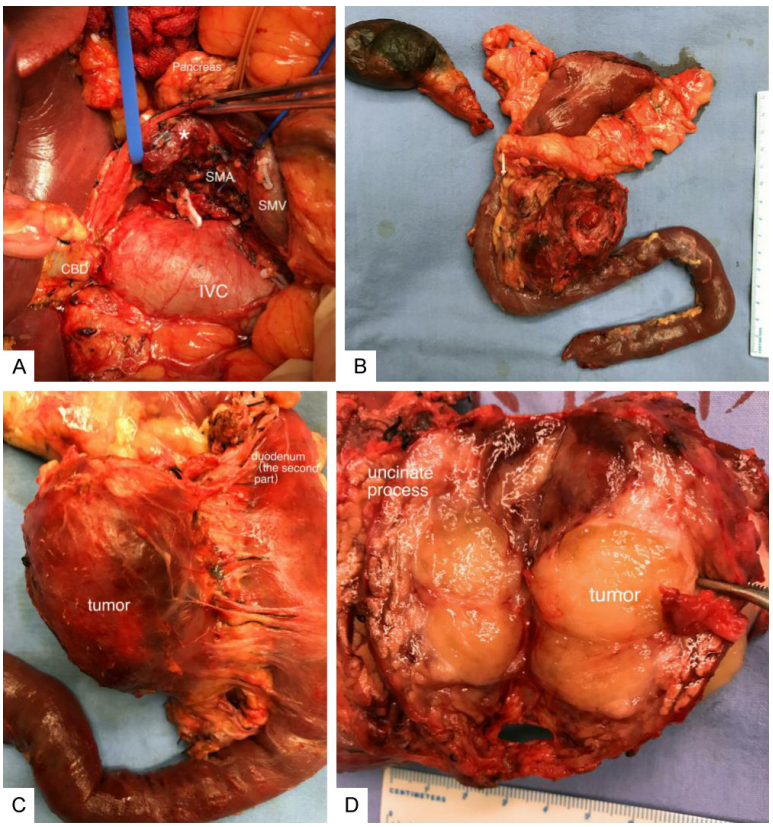

Figure 2. Intraoperative view and gross examination. A. Showed the operative field after removing the specimen and the *presented the pseudocapsule of the tumor formed due to the compression of the mass which was proved to be pathologically negative. B. Was the entire specimen. C. Was the view from the back and the tumor grew within the capsule of the pancreas. D. Was the section of the tumor showing the vague borderline between the tumor and normal pancreatic tissue of the uncinate process. (IVC = inferior vena cava, SMA = superior mesenteric artery, SMV = superior mesenteric vein, CBD = common bile duct).

The abdominal computed tomography (CT) scans prior to operation had shown a mass located in the uncinate process of pancreas, which was 62×45×73 mm in size with inhomogeneous contrast enhancement. CT values of the arterial, venous and delayed phases were 45-65 HU, 72-92 HU and 88-102 HU respectively. Moreover, judging from the CT angiography, the relationships between the tumor and several important vessels such as inferior vena cava, superior mesenteric vein and artery, common hepatic artery and its origination at celiac trunk were faint due to the unresectable or borderline resectable diagnoses especially in pancreatic adenocarcinoma (**Figure 1**).

With that the patient underwent multidisciplinary discussion in the MDT Consultant Center of Hepatobiliary and Pancreatic Cancer in Beijing Hospital, which consisted of professors from departments of general surgery, radiology, oncology, radiotherapy and pathology, several impossibilities were taken into account including high differentiated adenocarcinoma, pancreatic neuroendocrinal tumor, neurogenic tumor and even extra-pancreatic tumor which invaded pancreas as retroperitoneal

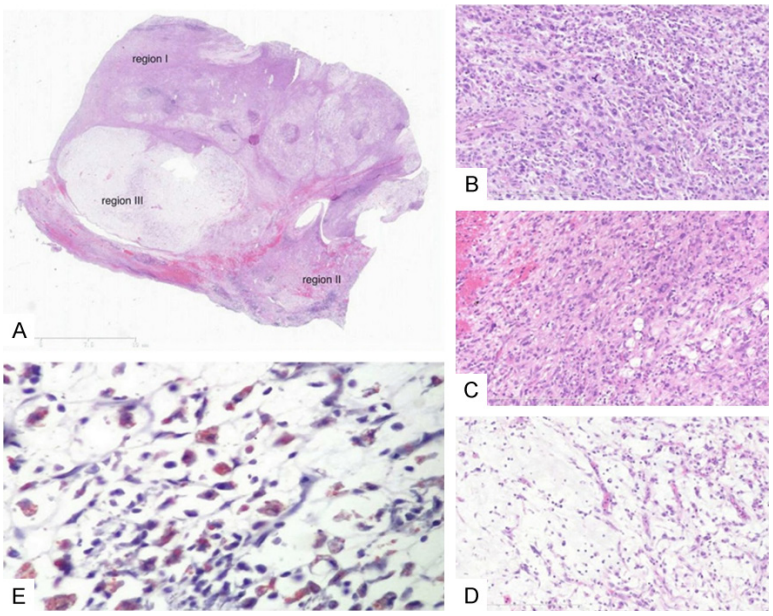

Figure 3. Pathologic examination. In the low magnification, the tumor appeared to be multi-nodular (A, HE×40). Region I to III represented three kinds of subtypes. Region I matched (B), showing dedifferentiated and pleomorphic types with obvious cellular atypia, visible mitotic figures and tumor giant cells (B, HE×400). Region II matched (C) and only a few liposarcoma cells of well-differentiated type existed mixing with spindle cells (C, HE×400). Region III matched (D) which was the myxoid type with obvious myxoid degeneration in Interstitial tissue (D, HE×400). (E) was the special staining of Sultan III, showing that the lipid in the cytoplasm of the tumor cells were stained orange (E, Sultan three ×400).

tumor. Since the relatively lower malignancy grade and borderline resectable imaging feature, a Whipple's procedure was selected and total mesopancreatic excision was conducted synchronously in order to gain R0 resection with enough lymphadenectomy (**Figure 2A**, **2B**). During the procedure, we identified that the tumor developed expansively, oppressing peripheral structure with limited invasion. Tumor with attached relative vessels was mainly involved with inflammation from potential space that could be dissected with some limitation. The operation lasted nearly eight hours.

In the gross pathologic examination, the tumor was yellowish, round, soft and full of mucous, which was found to be within the capsule of pancreas with gross R0 resection. The dividing line between the tumor and pancreas was vague (**Figure 2C**, **2D**). In the microscopic view, the tumor was diagnosed as liposarcoma with several types of differentiation, containing dedifferentiated type (40%), myxoid cell type (40%) and pleomorphic type (20%) with mitotic figures counted 10-15/10 HPF which reflected from medium to high invasive grade with invaded nerve. All the resection margins were negative and lymph nodes were found as 1/12 for metastasis.

With immunohistochemistry assay, the specimens were examined as positive in CD34 (strong), Lysozyme (positive), CD30 (partial), Desmin (partial), CD117 (partial), SMA (partial) and Calponin (weak) and negative in Myogobin, S-100, CD61, CK1-3, EMA, CD23, CD21, VM, Dog-1 and myogene. In special staining, the Sultan III and PAS-AB were positive (**Figure 3**).

The patient recovered smoothly after the operation without any postoperative complication and discharged after 14 days. During the hospitalization course, MDT consultation was held. Treatment strategy performed with adjuvant chemotherapy with clinical radiotherapy was decided and the patient had received MDT after discharge. No recurrence was found after 10-month clinical follow-up.

Discussion

Primary liposarcoma of the pancreas is extremely rare, represents in both genders (4 males and 3 females) and age (24 to 78 years old) as only 7 cases in the published literature. These seven patients usually complained about abdominal symptoms with stomachache and distension [1, 4, 5]. Anorexia and weight loss existed in some cases as systemic symptoms (4). Only two patients were asymptomatic [3, 6]. In the current case, the patient had a symptom of back pain which was similar to the locally advanced adenocarcinoma due to the location near the retroperitoneum and the character of local invasion or inflammation (**Table 1**). Tumor biomarkers were normal in all cases except for one patient with slightly elevated CA 19-9 as obstructive jaundice [7].

Table 1. Clinicopathological features of seven cases with liposarcoma of the pancreas in the literature

Source of the cases	Age	Gender	Clinical presentation	Location	Size (cm)	Treatment	Pathological subtype
Elliott et al, 1980 [1]	59	Female	Abdominal dilation	Body	16	DPS	Pleomorphic
Kim et al, 2014 [3]	78	Female	Asymptomatic	body	Not recorded	Tumor resection+CH	Well differentiated
Dodo et al, 2005 [4]	76	Male	Abdominal pain, anorexia and weight loss	Body and tail	9	DPS+RT	Well differentiated with area of dedifferentiation
Kuramoto et al, 2013 [5]	24	Male	Abdominal dilation	body	25	CP	Myxoid
M.Mattews et al, 2016 [6]	65	Female	Asymtomatic	Body	4	DPS	Well differentiated with sclerosing variant
M.C.Machado et al, 2016 [7]	42	Male	Abdominal pain	Head and neck	6.8	DPS+CH+RT	Dedifferentiated with pleomorphic and myxoid components
Present case	69	Male	Abdominal pain and back pain	Uncinate process	7.3	PD+RT	dedifferentiated type (40%) myxoid cell type (40%) pleomorphic type (20%)

DPS= distal pancreatectomy and splenectomy, CP = central pancreatectomy, PD = pancreatoduodenctomy, CH = chemotherapy, RT = radiotherapy.

Neither CT scan nor the magnetic resonance imaging (MRI) could report specific demonstration for this kind rare lesion in the literature [4-7]. The radiologic images had only suggested some density consistent with fat as well differentiated for this lesion. Relationships between the mass and neighbor tissues, organs, distal metastasis, and lymph node status were indicated with further diagnosis as needed.

According to the detection of morphologic features and cytogenetic aberrations, four main types of liposarcomas have been described as follow: well-differentiated, dedifferentiated, myxoid cell, and pleomorphic type [8]. Pathological diagnosis is mainly based on the histological features found in hematoxylin and eosin (H&E) stain. As lack of significant features, MDM2 FISH assay could be used for an ancillary diagnostic tool which had matched with well-differentiated liposarcomas [9]. In our case, the final diagnosis was made by typical histological features mainly and the special stain of Sultan III as a support of the lipid-originated tumor.

Both of well-differentiated and myxoid cell types indicated the low grade malignancy with relatively low risk of metastasis which were associated with a more favorable prognosis. However, the dedifferentiated and pleomorphic type were identified as high grade malignancy with remarkable biological aggressiveness which may predict the potential higher metastasis. Pleomorphic type was less than 5% of all liposarcomas with more aggressive and higher (30-50%) frequency of distant metastasis for lung, bone and liver [10, 11]. However, for both of the dedifferentiated and pleomorphic type, there was no difference in outcomes between the low-grade and high-grade dedifferentiated tumors associated with a 5-year metastatic risk as 20%-25% [8, 12]. Our case contained these two subtypes including the dedifferentiated and pleomorphic types, which could be explained as the reason for local infiltration and lymph node metastasis whereas no distant metastasis was reported in the six cases in the literature.

Two most important factors were highlighted to influence prognosis as differentiation degree and the adequacy of surgical resection in all liposarcoma cases. Five year survival following complete surgical excision had been reported as 41% to 50% [1, 13]. Aggressive surgical resection provided the best chance of cure even in the presence of resectable metastasis [8]. In the present case, we performed pancreatoduodenctomy with total mesopancreatic excision which was the standard procedure to treat pancreatic adenocarcinoma in order to reach R0 resection and abundant lymphadenectomy. Surgical resection, radiation and close follow up were the three steps of current recommendations [14]. Incomplete excision and radiotherapy had been shown to increase the duration of remission and suggested as a potential approach to achieve cure [4]. Two patients had no recurrence with radiotherapy for postoperative adjuvant therapy [4, 7]. Total other two cases received adjuvant chemotherapy after surgery. One case had no recurrence

with ifosfamide and epirubicin received [7], but the second one was lost to follow-up [3]. The target therapy was not applied with differentiated and pleomorphic liposarcoma for pancreatic liposarcoma treatment currently [15].

The recurrence was only reported in a patient who was submitted to central pancreatectomy without any postoperative adjuvant therapy at 44 months after surgery [5]. With MDT consultation, we recommended the current case to implement radiotherapy and close clinical follow-up. As a result, the prognosis appeared to be favorable for the patient. However the further outcome studies are necessary for the complete investigation for primary liposarcoma.

In conclusion, the present study reported a rare case of primary liposarcoma in the uncinate process of the pancreas who presented with abdominal pain and back pain. The tumor was found to grow within the pancreatic capsule and pathologically diagnosed as a liposarcoma for different stages of differentiation with lymph node metastasis and infiltration to nerves and peripheral tissues. Multidisciplinary therapy was implemented by Whipple's procedure with the postoperative adjuvant chemo and radiotherapy as a better benefit for integrative care for clinical medicine.

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Disclosure of conflict of interest

None.

Address correspondence to: Dr. Jian Chen, Department of General Surgery, Beijing Hospital, National Center of Gerontology, China, 1 Dahua Road, Dong Dan, Beijing 100730, China. Tel: +86013601250676; E-mail: david8336@163.com; chenjian0265@bjhmoh.cn

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