

Pancreatic Hemangioma – A Case Report

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ABSTRACT

Pancreatic hemangiomas are very rare, benign vascular tumours which are diagnosed incidentally during radiological investigation of non-specific symptoms. They should be considered in the differential diagnosis of any hypervascular pancreatic mass detected on CT or MRI. We present the case of a 70 year old patient with vague abdominal symptoms, who was investigated using ultrasonography, computerised tomography and magnetic resonance imaging to arrive at the diagnosis of giant pancreatic hemangioma. The patient underwent elective pylorus-preserving pancreatico-duodenectomy. Recovery was unremarkable and the patient is now symptom-free and well. This case and the supporting images illustrate the importance of establishing this diagnosis to prevent a patient from undergoing a high-morbidity surgery for a benign condition. If surgery is offered for symptom relief, imaging remains essentially helpful in planning the operation.

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Key words: Pancreatic mass; Hemangioma; Pancreatic tumour; Pancreatic imaging

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INTRODUCTION

Hemangiomas, are common benign vascular tumours but they are very rarely found in the pancreas^[1]. Few cases of pancreatic hemangiomas presenting in adulthood have been reported in the literature.

Hemangiomas usually present with nonspecific symptoms and therefore mostly diagnosed incidentally following resection or attempted resection for symptomatic pancreatic masses identified on ultrasound (US), computed tomography CT, or magnetic resonance imaging (MRI).

We report an adult patient with a histologically proven pancreatic hemangioma that was suspected on preoperative imaging and therefore the patient underwent a conservative surgical treatment and a pylorus preserving pancreaticoduodenectomy (PPPD) was performed.

CASE REPORT

A 70 year old lady presented with a history of intermittent left upper quadrant abdominal and flank pain, aggravated by eating over a period of 18 months. There was no history of weight loss or clinical jaundice, but a large mass was palpable in the epigastric region. Haematological tests including liver and renal functions were within normal limits. Past medical history included reflux oesophagitis, asthma, chronic kidney disease stage 3 and wide local excision for ductal carcinoma in situ of breast. Family history included a sister with ovarian cancer.

Ultrasound scan showed a large well circumscribed hyper-echoic mass with a small central hypo-echoic component within it, thought to arise from the small bowel mesentery. Differential diagnoses of Gastrointestinal Stromal Tumour (GIST) and neuroendocrine tumour were suggested. A subsequent CT scan of the chest, abdomen and pelvis showed a large well defined, enhancing soft tissue attenuation mass arising in close relation to the head of pancreas and second/third part of duodenum (Figure 1). The mass measured 7.9×6.5 cm on CT and displaced the third part of duodenum posteriorly but there was no evidence of local invasion. There was no evidence of local or retroperitoneal lymphadenopathy or of disease elsewhere. An ultrasound guided biopsy of this mass was performed but the sample was considered non diagnostic, histology showing fibroconnective tissue, blood and fibrin.

The images were reviewed by the hepatobiliary multidisciplinary team and upon revisiting CT scan images, the abdominal mass was felt to be probably arising from the head of the pancreas itself. The mass was noted to be well circumscribed and despite its size and anatomical position there was no biliary or pancreatic duct dilation. It showed peripheral enhancement with a central non enhancing component and a benign vascular tumour was suspected. A dynamic CT examination of the pancreas including pre-contrast, arterial, venous and delayed 5 and 10 minutes phases was performed. The pre-contrast CT scan demonstrated a hypo-



Figure 1 Pre-contrast.

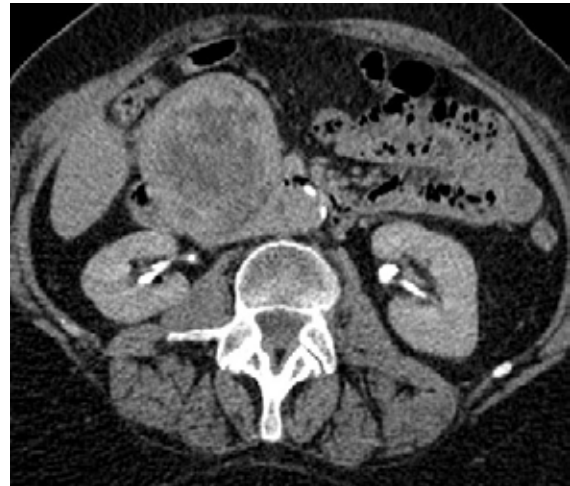


Figure 4 5_min_delay.

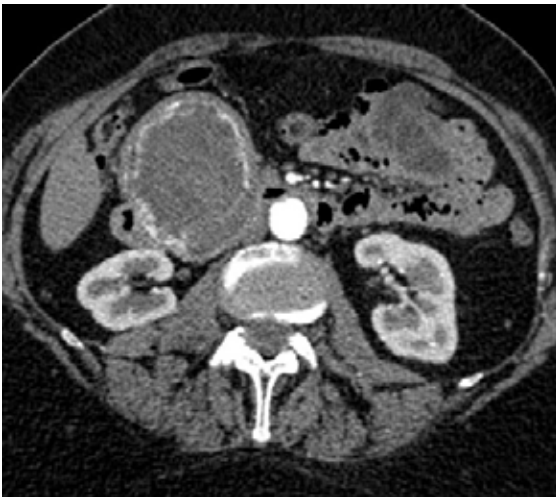


Figure 2 Arterial_phase.



Figure 5 10_min_delay.



Figure 3 Venous_phase.

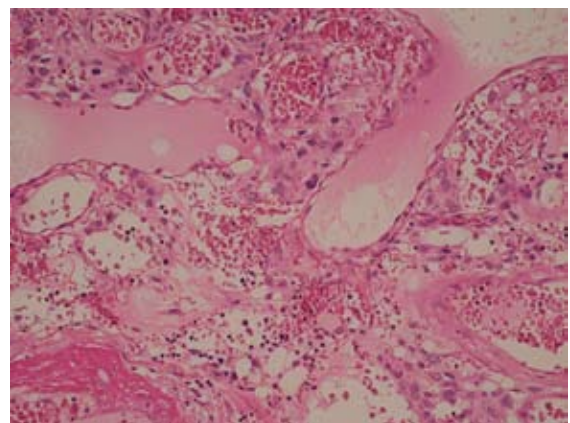


Figure 6 Panc Patho.

attenuating mass with a small fleck of peripheral calcification (Figure 1). Following administration of intra-venous contrast, the mass showed intense peripheral nodular enhancement (Figure 2) with slow but progressive filling-in in the delayed phases (Figures 3-5). The enhancement of the mass was equivalent to the abdominal aorta. A diagnosis of pancreatic giant hemangioma was suggested.

In the absence of radiological evidence of irresectability, a pylorus pre-

serving pancreatico-duodenectomy was undertaken to remove the pancreatic head lesion. Operative findings were a large tumor of the pancreas, firmly adherent to D2, D3 (duodenum) and to a part of the superior leaf of transverse mesocolon but with no infiltration into the mesocolic fat or blood vessels. Macroscopic examination of the resected specimen showed a grossly hemorrhagic mass completely replacing the head of pancreas.

Microscopic histopathological examination showed a vascular tumour composed of ectatic vascular channel lined by endothelial cells with an overall cavernous haemangiomatous pattern (Figure 6). The mass stained positively with CD31 highlighting its vascular nature. The absence of staining CAM 5.2 and MNF116 excluded an infiltrative epithelial ma-

Table 1 Pancreatic hemangiomas previously reported in literature.

YEAR	AUTHORS	AGE	SEX	PRESENTATION	IMAGING	LOCATION/SIZE	TREATMENT
1939	Ranstrom	61	F	At autopsy	-	Head 7X7cm	-
1961	Ringoir <i>et al</i>	71	F	Hematemesis, melena Abdominal pain	Abdominal plain film, intravenous cholangiography	Head 15cm	Retrocolic gastroenterostomy, vagotomy
1972	Colardyn <i>et al</i>	42	M	Malaise,	Abdominal plain film, angiography	Body, tail	Conservative
1985	Mangin <i>et al</i>	62	F	thrombocytopenia	US, ERCP, plain CT, arteriography	Head/ body/ tail 20x7 cm	Laparotomy, observation
1991	Kobayashi <i>et al</i>	30	M	Abdominal distension	US, CT, angiography, MRI	Head 20cm	Pancreatico-duodenectomy
1991	Dageforde <i>et al</i>	79	F	Abdominal pain	US, ERCP, angiography	Body/ tail junction 6x3 cm	Observation
2003	Chang <i>et al</i>	70	F	Epigastric tenderness	CT, angiography	Body/ tail junction 4x3.2 cm	Subtotal pancreatectomy
2006	Plank <i>et al</i>	36	M	Abdominal pain	CT, MRI, intraoperative US	Head 3cm	Laparotomy, observation
2009	Mundinger <i>et al</i>	45	F	Epigastric/ back pain	CT, MRI	Head 6.2x5.3cm	Pylorus preserving pancreatico-duodenectomy
2012	Malik <i>et al</i>	70	F	Abdominal pain	US, CT, CT angiography	Head 7.9x6.5cm	Pylorus preserving pancreatico-duodenectomy

lignancy. The MIB 1 index (a monoclonal antibody that immuno-reacts with a nuclear antigen ki-671 and is a useful marker of cellular proliferation) was very low as expected of a tumour of benign nature. The tumour was considered completely excised. No adjuvant chemotherapy was indicated.

The patient's postoperative course was uneventful, and she was discharged home 2 weeks post surgery. The patient was seen at surgical clinic 6 weeks post operation and she had recovered very well from surgery with no delayed complications.

DISCUSSION

Hemangioma is a common benign vascular neoplasm that can be found in all organs of the human body but it is very rarely seen in the pancreas. Pancreatic vascular neoplasms, including lymphangioma, hemangioma, hemolymphangioma, hemangiopericytoma, hemangioblastoma, and hemangiosarcoma collectively account for 0.1% of all pancreatic tumors^[1].

Adult pancreatic hemangiomas are a different pathologic entity from those that arise in the pediatric age group^[2]. Pediatric (infantile) pancreatic hemangiomas undergo proliferation in infancy and then slowly involute and regress over several years, leaving a fibro-fatty residuum by adulthood^[3].

Only 9 cases of adult pancreatic hemangioma have been previously reported, 5 in English medical literature^[4-8] and 4 in non-English literature^[9-12] (table 1). Only one prior case has undergone pylorus preserving pancreatoduodenectomy^[7].

About two third of pancreatic hemangiomas reported in the literature occurred in the head of pancreas and they tend to be large in size but non-invasive. The term giant hemangioma is usually used to describe lesions greater than 4-5 cm in diameter. However, some authors^[1-3] have defined giant hemangiomas as lesions greater than 6 or 10 cm in diameter.

The imaging features of giant liver hemangiomas have been extensively described in the literature and they are often heterogeneous on non-enhanced CT scans, with marked central areas of low attenuation. Pathologically, the central cleft like area corresponds to cystic degeneration or liquefaction and the internal septa usually relate to poorly cellular fibrous tissue^[13].

After intravenous administration of contrast material, they usually show typical early, peripheral, nodular enhancement with progressive centripetal enhancement and incomplete filling. However, in clinical experience this is often not the rule, as this was only described in one case out of 5 cases reported in the literature^[8]. Most cases reported radiological hypo-vascularity with absence of the characteristic hyper-vascular enhancement^[5,6,8]. Hence radiological diagnosis can be challenging.

On MRI, giant liver hemangiomas appear as a hypo-intense mass

with a cleft like area of lower intensity on T1-weighted sequence. On T2-weighted images they show a markedly hyper-intense cleft like area and some hypo-intense internal septa within a hyper-intense mass^[14]. The enhancement is equivalent to that seen on CT, with incomplete filling of the lesion; the cleft like area remains hypo-intense, as do the internal septa.

Cystic variant of pancreatic hemangioma mimicking malignant cystic pancreatic neoplasm has also been described^[15]. It often contains areas of neovascularization with arteriovenous shunting, and blood flow through these cavernous vascular components is slow with diminished contrast enhancement on CT and MRI^[5,6].

In the present study, the pancreatic mass showed imaging features which are similar to liver giant hemangiomas with peripheral nodular enhancement and progressive centripetal enhancement. To the best of our knowledge, this is the first case report that included full dynamic CT scan series imaging (including delayed 5 and 10 minutes scans) of pancreatic hemangioma with its typical imaging features.

The presence of hyper-vascular masses is rare in the pancreas. Neuroendocrine tumors, metastases of renal cell carcinoma, and intra-pancreatic accessory spleen have been reported to be hyper-vascular on contrast-enhanced CT and MRI.

Differentiation of hemangiomas from other hyper-vascular tumors can be difficult. Neuroendocrine tumours and metastases grow invasively and obstruct anatomical structures such as pancreatic and common bile duct but infiltration of adjacent anatomical structures by hemangioma has never been reported. Accurate diagnosis is usually made with delayed-phase CT or MR imaging because hemangiomas remain hyper-attenuating or hyper-intense, whereas hyper-vascular metastases and neuroendocrine tumors do not. Another important finding in diagnosis of hemangioma is that its enhancement pattern is parallel to that of the aorta during all phases.

Another differential diagnosis of hypervascular intra pancreatic lesions is the presence of accessory splenic tissue, which is sometimes found in the pancreas^[16]. However, it is almost always found in the pancreatic tail adjacent to the splenic hilum and it shows an enhancement pattern which is parallel to normal spleen^[17].

CONCLUSION

Pancreatic hemangiomas are rare but may show characteristic radiological appearances that suggest diagnosis. Pancreatic hemangiomas should be considered in the differential diagnosis of any hypervascular pancreatic mass on CT or MRI when any of the 2 following imaging features is present: (1) The mass shows peripheral nodular enhancement with progressive centripetal filling defect which is parallel to the enhancement of the aorta on all phases; (2) Hypervascular mass that does not infiltrate adjacent structures or

obstruct the pancreatic duct or common bile duct.

Through this case report, we wish to highlight the importance of establishing a radiological diagnosis since this condition is essentially benign and can therefore be potentially managed conservatively. Surgery remains an option in patients presenting with symptoms or complications. Pre-operative radiological diagnosis will be of utmost value to the surgeon for planning because intra-operative haemorrhage will be a concern. The aim being symptom relief and adequate biliary drainage rather than resection margin clearance, extent of surgery (biliary bypass, limited pancreatectomy, pancreatico-duodenectomy) will need to be tailored according to individual patients. There is only one report of formal pylorus preserving pancreatico-duodenectomy prior to our case report.

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