CASE OF THE MONTH

Unsuspected cystic left upper quadrant mass

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Case report

A 27-year-old African American female with no significant medical history presented with left upper quadrant pain radiating to the back, which had been worsening over several months. She had an inability to tolerate oral intake, progressive nausea and vomiting. A review of her symptoms revealed palpitations, mild shortness of breath and two episodes of recent bilious vomiting without haematemesis. Physical examination showed diffuse abdominal tenderness on palpation and mild tachycardia. Laboratory evaluation showed no significant abnormalities, including normal pancreatic and liver enzymes. The chest radiograph was normal.

A contrast-enhanced CT of the abdomen was performed with a 64-MDCT scanner (Aquilion 64; Toshiba

Medical Systems, Nasu, Japan) with the following scanning parameters: rotation time, 0.5 s; beam collimation, 32×1.0 mm; section thickness and interval, 5 mm; helical pitch, 27; 120 kV and tube current in the automatic milliampere exposure setting. Coronal reconstructions were obtained at 4 mm thickness and 4 mm intervals.

The patient received 100 ml of intravenous (iv) iohexol (Omnipaque 300, Nycomed, Amersham, UK) administered via a mechanical injector at 3.0 ml s^{-1} with a scanning delay determined by real-time contrast tracking, starting at 70 HU added to unenhanced liver.

What are the CT findings?

What is the most likely diagnosis?

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Figure 1. Axial image showing enhancing soft tissue (black arrow), cystic mass (white arrow), gastric fundus (black arrowhead) and gastro-oesophageal junction (white arrowhead).

Discussion

A large multicompartamental left upper quadrant mass centred on the fundus of the stomach was revealed. The larger compartment exhibited homogeneous fluid-like low attenuation material and a focus of enhancing tissue on the medial aspect of this cystic lesion (Figures 1 and 2). The differential diagnosis, supported by radiological findings, included pancreatic pseudocyst, abscess, haematoma, gastrointestinal stromal tumour (GIST), leiomyoma, gastric lymphoma, sarcoma etc.

A pre-operative esophagogastroduodenoscopy was conducted to rule out peptic ulcer disease, and this showed a large mass in the fundus of the stomach without evidence of gastric inlet obstruction. The patient was symptomatic from the gastric mass; therefore, surgical resection was deemed the optimal treatment option. The patient was taken to the operating room with a plan to perform a cholecystectomy and resection of the gastric mass with a pre-operating function diagnosis of gastric mass and biliary colic. However, owing to the proximity of the mass to the gastro-oesophageal junction, a total gastrectomy, cholecystectomy and wedge resection of the liver was performed. The patient had an uneventful recovery. Pathological examination showed a 7.5×6 cm circumscribed mass at the proximal end of the stomach, along the greater curvature and involving the fundus. The serosa overlying the mass was brown and ragged. Serial sectioning revealed a central area of haemorrhage and necrosis surrounded by a pink, smooth, rubbery cut surface. Routine sections showed ulceration with haemorrhage and an extensive fibroblastic response. Additional sections revealed antral-type gastric mucosa with heterotopic pancreatic ducts and glands within

Figure 2. Coronal reconstruction showing enhancing tissue (black arrow), cystic mass (white arrow) and gastric fundus (white arrowhead).

muscle. The ulceration and fibrosis were a probable consequence of active secretion by heterotopic pancreatic tissue. Staining with CD117, beta-catenin, alk-1, S10, smooth muscle actin and CD34 did not support a neoplastic process. The gall bladder and liver biopsies were negative for tumour. The CT findings corroborate the surgical and pathological findings of an ectopic pancreas. The enhancing feathery tissue (2×2 cm) had a similar enhancement to the pancreas and is clearly identified in the gastric wall, representing an ectopic pancreas and a well-circumscribed smooth walled cystic mass (7.5×6 cm) compressing the gastric fundus, which could have resulted from repeated inflammatory/haemorrhagic pancreatitis involving an ectopic pancreas (Figures 1 and 2).

An ectopic pancreas is defined as pancreatic tissue that lacks either anatomical or vascular communication with the normal body of the pancreas and possesses all of the following histological features: pancreatic acinar formation, duct development and islets of Langerhans [1]. The incidence in autopsies ranges from 0.5% to 13.7%; they are more common between 30 and 50 years of age, with a male predominance [2]. The most commonly reported sites for pancreatic ectopy are the stomach (24–38%), the duodenum (9–36%) and the jejunum (0.5–27%) [1]. When symptomatic, nausea and vomiting (27%), epigastric pain (27%), ulceration (27%) and weight loss (18%) are the most frequent symptoms and signs [3]. Documented complications include malignancy, pseudocyst and aneurysm formation, gastrointestinal obstruction, pancreatitis and intussusception in a jejunal location. Recent radiological studies of ectopic pancreas have produced equivocal results. A 12 patient non-controlled study reported that the CT scans of 10 of the 12 patients with an ectopic pancreas were misread [4]. Moreover, the following CT findings were found to be non-specific for diagnosis: enhancement similar to a normal pancreas, round or oval shape and smooth or serrated edges. In a retrospective case-control study investigating the CT findings distinguishing an ectopic pancreas from GIST and leiomyoma found several differentiating characteristics: pre-pyloric

or duodenal location, endoluminal growth pattern, ill-defined border, prominent enhancement of overlying mucosa and a long diameter/short diameter ratio of greater than 1.4 ($p < 0.05$ for each finding). When at least 2 of these 5 criteria were used in combination, the sensitivity and specificity for diagnosing ectopic pancreas were 100% (14 of 14) and 82.5% (33 of 40), respectively. When four of these criteria were used, a sensitivity of 42.9% and a specificity of 100% were achieved [5]. Even in hindsight, our patient's CT scan does not easily discriminate an ectopic pancreas from a gastric tumour. The image demonstrates a focally thickened gastric wall with an irregular granular hyper-dense area corresponding to pancreatic enhancement. In tandem, there are multiple cystic lesions, indicative of several rounds of pancreatitis and necrosis, that have a similar appearance to leiomyoma and GIST.

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