CASE REPORT

Pancreatic gout and the role of multimodality imaging in its management

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SUMMARY

Uric acid deposition in the pancreas is very rare and neither an endoscopic ultrasound (EUS) nor a contrast-enhanced CT image of this condition has ever been published. We describe a case of asymptomatic pancreatic gout that was detected incidentally on CT. Imaging features mimicked pancreatic neoplasm, warranting further evaluation with EUS-guided fine-needle aspiration. Samples revealed debris encrusted with monosodium urate crystals. Follow-up CT showed complete resolution with urate-lowering therapy. We aim to augment current knowledge on the imaging of pancreatic gout and discuss its management.

BACKGROUND

Gout is a common crystal deposition disease causing inflammation of the afflicted site, usually involving the joints. Gouty tophus in the pancreas is very rare, with only two cases reported in the medical literature.^{1 2} A paucity of information remains on its imaging features and management. Neither an endoscopic ultrasound (EUS) nor a contrast-enhanced CT image of this entity has previously been published. We hope our report can raise awareness of this rare diagnosis and build on the knowledge of its management.

CASE PRESENTATION

A 67-year-old Chinese man presented to the emergency department, with acute right iliac fossa pain for 2 days. On examination, he was alert and non-toxic. His vital signs were temperature 37.3°C, blood pressure 184/86 mm Hg, pulse rate 86 bpm, respiratory rate 18 breaths/min and oxygen saturation 98% on room air. His abdomen was tender maximally at the right iliac fossa, with positive

rebound tenderness. There was no upper abdominal tenderness.

The patient had a history of chronic tophaceous gout on allopurinol for 24 years. Pretreatment uric acid level was 579 µmol/L (normal 220–540 µmol/L). He also had a history of hypertension, diabetes mellitus, cholelithiasis and recent deep venous thrombosis on treatment with rivaroxaban. There was no history of pancreatitis, alcohol use or abdominal trauma.

INVESTIGATIONS

Contrast-enhanced CT was performed to evaluate the cause of the pain, and revealed caecal diverticulitis corresponding to the site of pain. Incidentally, an ill-defined hypodense lesion (1.6×1.7 cm) was found in the pancreatic neck (figure 1). Average attenuation of this lesion on arterial, portal venous and delayed phases were 26, 23 and 17 Hounsfield units, respectively, compared with 105, 98 and 64 Hounsfield units, respectively, for normal pancreatic parenchyma. Mild peripancreatic fat stranding and a few subcentimetre peripancreatic and coeliac axis lymph nodes were also seen. CT features were suspicious for a pancreatic neoplasm. Further work up revealed a borderline high amylase level of 166 U/L (normal 0–110 U/L), and normal levels of carcinoembryonic antigen and carbohydrate antigen 19-9 tumour markers.

EUS showed an ill-defined hypoechoic lesion (1.5×1.6 cm) at the pancreatic neck, with a central anechoic area (figure 2). The main pancreatic duct was also prominent, measuring 3.3 mm in diameter. EUS features were suspicious for malignancy and the lesion was sampled by EUS-guided fine-needle aspiration (figure 3). These revealed debris, bile pigments and encrustations of monosodium urate crystals (figures 4 and 5). No malignancy was

Figure 1 Coronal CT in arterial phase. Incidental finding of hypodense lesion (white arrow) at the pancreatic neck and surrounding fat stranding.

Figure 2 Endoscopic ultrasound. The pancreatic neck lesion showed ill-defined hypoechoic appearance with central anechoic area.

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Figure 3 Fine-needle aspiration of the pancreatic neck lesion was subsequently performed under endoscopic ultrasound guidance.

seen. Uric acid was 266 $\mu\text{mol/L}$ (normal 220–540 $\mu\text{mol/L}$) at the time of biopsy.

TREATMENT

Mild diverticulitis was treated conservatively with antibiotics. The patient was also treated with colchicine for a concomitant flare of left knee gouty arthritis during the same admission, and was continued on allopurinol. His condition improved and he was eventually discharged with outpatient follow-up.

OUTCOME AND FOLLOW-UP

Allopurinol dosage was gradually increased in the outpatient clinic due to a rising trend of uric acid. Follow-up CT pancreas at 9 months after the initial presentation showed complete resolution of the pancreatic lesion, with residual scarring (figure 6).

DISCUSSION

Gouty tophi are known to have a wide range of unusual localisation in the body.^{3 4} There are only two case reports of pancreatic gout prior to our case, one mimicked pancreatic neoplasm and the other mimicked infection of a pancreatic pseudocyst.^{1 2} Our report is the first to show EUS and contrast-enhanced CT images of pancreatic gout prior to biopsy.

Figure 4 Endoscopic ultrasound-guided fine-needle aspiration (Papanicolaou stain, $\times 100$). Light microscopy showed debris and bile pigments. No malignancy was seen.

Figure 5 Endoscopic ultrasound -guided fine-needle aspiration (Papanicolaou stain, $\times 100$). Polarised light microscopy showed debris encrusted by monosodium urate crystals.

Our patient had asymptomatic pancreatic gout and its true duration could not be ascertained. The sequence of pathogenesis may be initial monosodium urate crystal deposition acting as a nidus for subsequent localised pancreatitis or initial gallstone pancreatitis with subsequent crystal deposition.

Attenuation of the lesion is much lower than the typical Hounsfield unit of uric acid calculus,⁵ likely due to the microscopic size of the tophi. Dual-energy CT has been shown to be useful in the detection of gouty tophi.⁶ We speculate that, in a patient with known gout and a pancreatic lesion, evaluation with dual-energy CT may be helpful.

The complete resolution on follow-up scan was deemed to be due to urate-lowering therapy. Time to complete resolution may be dependent on lesion size. A previously reported case was larger in size (7.6 cm) and completely resolved at 18 months.² The lesion in our case was smaller (1.7 cm) and completely resolved at 9 months.

Gouty tophi are also known to deposit in malignant tumours elsewhere in the body.^{3 4} Confident diagnosis of pancreatic gout is thus best achieved by excluding malignancy through tissue sampling and follow-up for complete resolution.

Figure 6 Coronal CT in arterial phase. Follow-up scan 9 months later showed residual scarring (white arrow) and complete resolution of the hypodense lesion, and fat stranding.

Learning points

- ▶ Pancreatic gout is very rare and can mimic neoplasm on both contrast-enhanced CT and EUS.
- ▶ Image-guided biopsy is required for diagnosis.
- ▶ Pancreatic gout can completely resolve with urate-lowering therapy. Given that gouty tophi are also known to deposit in malignant tumours, follow-up for complete resolution is still recommended to exclude malignancy.

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interpreted and prepared the pathological images, and revised the manuscript. WYC conceived the idea of publication, interpreted CT images and revised the manuscript.

Competing interests None declared.

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