Reminder of important clinical lesson

The disappearing abdominal mass: a duodenal pseudotumour

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Summary

Reports of inflammatory pseudotumours can be found in the literature affecting different organs of the body. The authors present a case and discuss the differential diagnosis of an inflammatory duodenal mass. Both symptomatology and radiological findings suggested a more sinister cause, such as a malignancy. However, histological analysis revealed normal mucosa and after conservative management the mass spontaneously resolved.

BACKGROUND

This case is based upon a rare phenomenon that causes diagnostic difficulty for clinicians, and anxiety to patients and families. Repeated investigations were performed due to the concern there was an underlying malignancy and the

broad differential diagnosis was not initially appreciated. We believe this case can aid similar cases in the future in that a benign lesion can form part of the differential to a duodenal mass, and that if a pseudotumour is identified in the duodenum, a conservative follow-up approach can be adopted.

Figure 1 Post oral and intravenous contrast coronal image. A 4 × 8.5 cm fluid density duodenal lesion is demonstrated (white arrow).

Figure 2 Post oral and intravenous contrast axial images. There is a complex duodenal lesion of fluid density arising from the wall of the duodenum with internal septations and a small pocket of peripheral air (white arrow). There is associated stranding in the pararenal space.

CASE PRESENTATION

A 59-year-old female presented with a 2-week history of upper abdominal pain and vomiting, associated with lethargy. The patient reported having lost weight, but was unable to quantify this objectively. There was no change in bowel habit and no complaints of jaundice, fever or rigors. She had been discharged from hospital the previous week after an admission with similar symptoms that had been treated conservatively, and was given an outpatient gastroscopy appointment.

Her medical history included chronic obstructive airways disease and hypertension, but no history of inflammatory bowel disease or peptic ulcer disease.

Physical examination revealed tenderness in the epigastrium and left hypochondrium, with voluntary guarding, but normal physiological vital signs. She was subsequently readmitted for further evaluation.

INVESTIGATIONS

Laboratory studies identified a normal full blood count, amylase, renal and liver function tests, but a raised C reactive protein (58 mg/l). Tumour markers, including α -fetoprotein and CA 19-9, were within normal limits.

A plain abdominal radiograph from the first admission was normal, but an ultrasound identified a distended gallbladder with no evidence of gallstones. The repeat scan, which was after a 12-day interval, once again failed to

identify the presence of gallstones. However, a 1.6 cm soft tissue density adjacent to the second part of the duodenum (D2) was noted, raising the suspicion of a malignancy. This lesion was not identified on the first ultrasound by the sonographer.

The patient subsequently underwent CT of the chest, abdomen and pelvis, which demonstrated an 8.6 × 3.6 cm well-defined low-density lesion surrounding the second part of the duodenum (D2), and extending towards the third part of the duodenum (D3) and the pancreatic head (figure 1). This lesion appeared complex but predominantly cystic, with average Hounsfield units of 25. The lesion demonstrated some internal enhancement and was associated with some peri-enteric inflammation and two low-density locules indicative of air arising from the lateral aspect of D2 (figure 2). No extravasation of luminal contrast was seen. The biliary tree and pancreatic duct appeared normal, with no focal pancreatic lesions nor associated lymphadenopathy.

The patient although asymptomatic of any chest symptoms did have bilateral extensive pulmonary emboli on the CT imaging of the thorax. The findings of thromboembolic disease also arose concern and suspicion for an underlying malignancy especially as no other risk factors for pulmonary emboli were present.

A subsequent gastroscopy demonstrated a sliding hiatus hernia for a length of 5 cm with otherwise a normal

Figure 3 Post oral and intravenous contrast axial images 1 month after initial presentation. The previous duodenal mass has now resolved with minimal residual stranding in the pararenal space (white arrow).

stomach, normal duodenum and no luminal narrowing. Subsequently, transabdominal ultrasound-guided biopsy was performed to obtain multiple fragmented core samples. Histopathological analysis showed normal duodenal mucosa.

The patient went on to have an endoscopic ultrasound (EUS) to characterise the duodenal lesion, in particular, to assess the muscular layers and any invasive features, and to target any biopsies. This was performed using a Aloka Prosound Alpha 10 machine (Olympus, Tokyo, Japan) and a linear scope. However, no submucosal or mural abnormality of the duodenum was identified and an EUS-guided biopsy was, therefore, not performed. An endoscopic retrograde cholangiopancreatography at the same sitting demonstrated an incidental adenoma at the ampulla, and repeat biopsies were performed of D2. These biopsies showed no active inflammation, dysplasia or evidence of malignancy.

With normal histopathological studies on two separate occasions, a repeat CT scan was performed after 1 month of initial presentation. This failed to demonstrate the presence of a duodenal mass, showing only the presence of minor duodenal stranding (image 68/185) with significant resolution of the previous findings (figure 3).

DIFFERENTIAL DIAGNOSIS

Benign and malignant conditions were included in the differential diagnosis of this duodenal mass. In the context of

the clinical history and the presence of bilateral pulmonary emboli, a neoplastic cause was thought most likely on the initial presentation. Neoplastic differentials would include a stromal tumour, small bowel lymphoma and an atypical adenocarcinoma. However, the negative EUS and subsequent improvement on cross-sectional imaging favoured a benign inflammatory pathology.

Benign duodenal lesions may be generalised or focal. Generalised pathologies include infections such as giardiasis or inflammatory causes such as Crohn's disease and vasculitis. Relevant medical history, including foreign travel, or the presence of other multi-systemic signs would exist in these conditions. In this case the pathology is focal on imaging and the differentials would include an intramural haematoma^{1 2} secondary to trauma, endoscopic intervention or a blood coagulopathy. The haemoglobin level did not significantly change during the admission and there were no markers to suggest bleeding in the history. An inflammatory focal pathology was also considered in view of the imaging findings of stranding and improvement on follow-up. These would include an intramural abscess³ or a sealed-off perforation. The former is rare and associated most commonly with air-fluid levels on imaging and a worse clinical condition. Intramural abscesses would usually be a complication of intervention and are also associated with signs of sepsis. In this case, the lesion was most in keeping with a sealed-off perforation due to

the inflammatory stranding, fluid density and presence of air-locules on CT. The time-course for improvement following conservative treatment is also in keeping with this diagnosis.

TREATMENT

A proton pump inhibitor was initially prescribed, but was later withdrawn upon a normal gastroscopy. Anticoagulation therapy was commenced once pulmonary emboli were identified.

OUTCOME AND FOLLOW-UP

During the admission, symptoms improved and the inflammatory markers normalised. She remained afebrile and her haemoglobin level remained static around 12.2 g/dl. The patient was then discharged from hospital, reviewed in clinic 1 month later and remained asymptomatic. There have been no concerns regarding any further abdominal pain to date.

DISCUSSION

Pseudotumours are non-neoplastic, inflammatory lesions that can be found in several organs of the body.⁴⁻⁶ The aetiology is currently unclear, but some reports of pseudotumours in the duodenum have been attributed to gallstones^{4 7} and peptic ulceration.⁸ There is a paucity of data regarding the pathophysiology of duodenal inflammatory pseudotumours with only a handful of case series on this topic. No large clinical nor preclinical data exists that may guide us towards any underlying pathophysiological mechanism. One case study suggests that an aetiological factor may be the passage of calculi through the ampulla of Vater, resulting in inflammatory changes with pseudotumour formation.⁷ In another case, an impacted gallstone in the common bile duct gave rise to soft tissue oedema.⁴ We hypothesise that the pseudotumour in this case was secondary to a sealed perforation that may have been caused by a gallstone that was passed in the initial presentation. In view of the negative findings of the EUS, it was thought that the most likely pathology had resolved, which was in keeping with a benign sealed perforation. A diverticulum could be another cause for a perforation, but this is uncommon and unlikely in the absence of other diverticula identified on CT.

Some cases of pseudotumours have resulted in surgical removal⁹ while others have resolved on medical management alone. Low *et al* (1998) described a series of cases of duodenal pseudotumours with improvement of symptoms and resolution of the lesion with proton pump inhibitors. Awareness of this differential is important to avoid unnecessary surgery and anxiety.

This pseudotumour presented a diagnostic challenge due to its resemblance to a neoplastic lesion on numerous endoscopic and radiological investigations. This finding was in parallel to one of Leese *et al* (1986), where 11 patients with pseudotumours had an appearance indistinguishable from neoplasia on endoscopy. The presence of such lesions requires further investigations such as cross-sectional imaging and histology to exclude the more significant finding of a malignancy.

We recommend a conservative approach in the presence of inflammatory cells present on biopsy with an interval scan.

Learning points

- There are benign and malignant causes of duodenal masses, including inflammatory pseudotumours, intramural haematomas and abscesses.
- Multiple imaging modalities may be needed, both cross-sectional and endoscopic, to make the diagnosis
- Acknowledging the broad differential diagnosis warrants undertaking a vasculitic screen and microbial culture of the appropriate tissue specimens to complement the other investigations.
- The diagnostic difficulty should be appreciated and interval imaging may be required

Acknowledgements The authors thank Dr Richard Gordon-Williams for his kind contribution.

Competing interests None.

Patient consent Obtained.

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Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Khan F, Vessal S. The disappearing abdominal mass: a duodenal pseudotumour. *BMJ Case Reports* 2011;10.1136/bcr.01.2011.3746, date of publication

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