CASE REPORT

Cause or effect? intramural duodenal haematoma and pancreatitis

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Introduction

Intramural duodenal haematoma (IDH) is an uncommon pathology that occurs mainly post trauma or iatrogenically during endoscopic procedure. It remains rare in the setting of acute pancreatitis. We explore the differences in pancreatitis related vs non-pancreatitis related IDH and analyse if IDH is the cause or effect of acute pancreatitis.

Background

We present a case of a 37-year-old male who was admitted under the Acute Surgical Unit with 1-day of upper abdominal pain, nausea, and vomiting. Preceding this admission, he had repeated episodes of acute pancreatitis secondary to alcohol intake, which were treated conservatively. Since then, he had abstained from alcohol and has no history of trauma or anticoagulant use.

On review, he had epigastric and right upper quadrant tenderness with guarding. Initial biochemistry showed a haemoglobin of 174 g/L, raised inflammatory markers with white cell count of 15.8 x 10^9/L, and C-reactive protein of 35mg/L. Liver function tests were unremarkable and lipase level was 109U/L. Coagulation profile was normal. Amylase assay is not routinely conducted at our institution because of its short half-life and lower sensitivity.

A Computer Tomography (CT) of his abdomen revealed acute pancreatitis with peripancreatic fat stranding, right upper quadrant peritoneal free fluid with extension to the duodenal wall into the subhepatic, anterior right pararenal space, paracolic gutter. Furthermore, a 5.0 x 4.0 x 5.3cm duodenal intramural and intraluminal mass with a Hounsfield unit of 54 suggestive of acute haematoma. There was no associated gastric outlet obstruction or biliary obstruction on imaging. A follow-up CT angiography showed no pseudoaneurysm and no active bleeding into the intramural duodenal haematoma

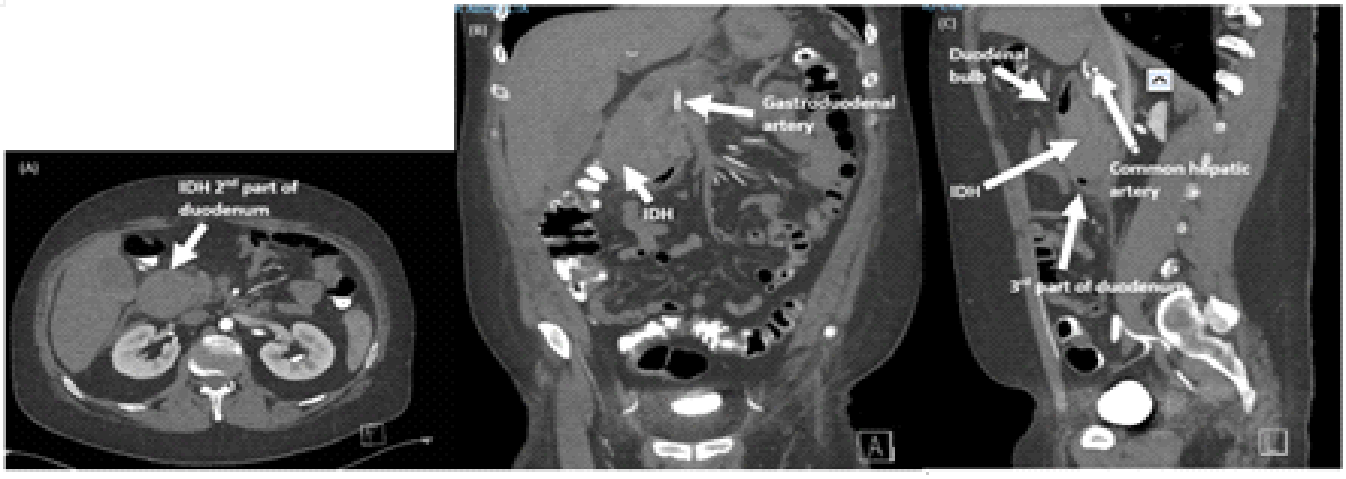

Figure 1 (A) Axial CT abdomen angiography arterial phase demonstrating a 50mm IDH in the 2nd part of the duodenum with no active contrast extravasation. (B) Coronal CT abdomen angiography with a normal calibre gastroduodenal artery and no complicating pseudoaneurysm. (C) Sagittal CT abdomen angiography showing the 1st, 2nd and 3rd part of the duodenum and common hepatic artery.

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(Figure 1). Abdominal ultrasound confirmed a 5.1cm solid duodenal mass with no appreciable internal vascularity. There was no evidence of cholelithiasis or cholecystitis.

Based on the Revised Atlanta Criteria, our patient was diagnosed with Acute Pancreatitis with an associated intramural duodenal haematoma, plausibly from the erosion of the submucosal vessel walls. This was likely in the context of chronic pancreatitis from previous attacks of acute pancreatitis secondary to his alcoholism.

He was admitted under the Acute Surgery Unit, resuscitated with intravenous fluids, prescribed analgesia, and proton pump inhibitor. Follow-up CT 5 days post-admission showed that the haematoma had grown slightly in size, measuring 5.7 x 5.0 x 7.7cm. There were no signs of acute haemorrhage and the patient tolerated oral intake. He was discharged home with outpatient follow-up. Serial CT scan 2 months post discharge showed that the duodenal haematoma had resolved (Figure 2).

Discussion

Intramural duodenal haematomas (IDH) are uncommon pathologies secondary to blunt trauma, anti-coagulation, coagulopathies or iatrogenic causes from endoscopic biopsies(1). IDH related to pancreatic disease is an even rarer phenomenon. This can occur in the setting of acute or chronic pancreatitis, malignancy, and ectopic pancreas in the duodenal wall (2). The formation of IDH in the setting of pancreatitis remains unclear, with several theories postulated. One hypothesis is a primary spontaneous expanding intramural haematoma causing pancreatic duct obstruction resulting in acute inflammation. Uncontrolled proteolytic enzyme activation during pancreatitis can also erode the submucosal vessels in the duodenum leading to secondary haematoma formation(3). The latter was the most likely cause of IDH in our patient as there were no radiological signs of biliary or pancreatic duct obstruction.

In complicated IDH, patients can present with gastric outlet obstruction, haematemesis, duodenal necrosis/perforation, biliary obstruction or cholangitis (4). Traumatic IDH commonly occurs at the subserosa layer of the duodenum, while pancreatitis related IDH is more commonly located in the submucosal layer, increasing the risk of haematemesis due to mucosal erosion(4).

Radiological studies are the most reliable modality in the diagnosis of IDH. Ultrasound is a non-invasive imaging modality that can be used to diagnose and follow-up on the resolution of IDH. An early haematoma appears as a uniform echogenic mass on sonography. Features such as hypoechogenicity or cystic appearance indicate liquefaction and resorption of the haematoma(1). Contrast-enhanced CTs and magnetic resonance imaging (MRI) both have high sensitivities in the diagnosis of IDH. Appearance on CTs depends on age of haematoma, with fresh blood having an area of increased density. Density decreases as the haematoma ages(1).

Most pancreatitis related IDH run a benign course. In a haemodynamically stable patient, medical management is suited for patients including nasogastric tube insertion, fluid resuscitation and bowel rest, with utilisation of total parenteral nutrition if unable to feed enterally(4).

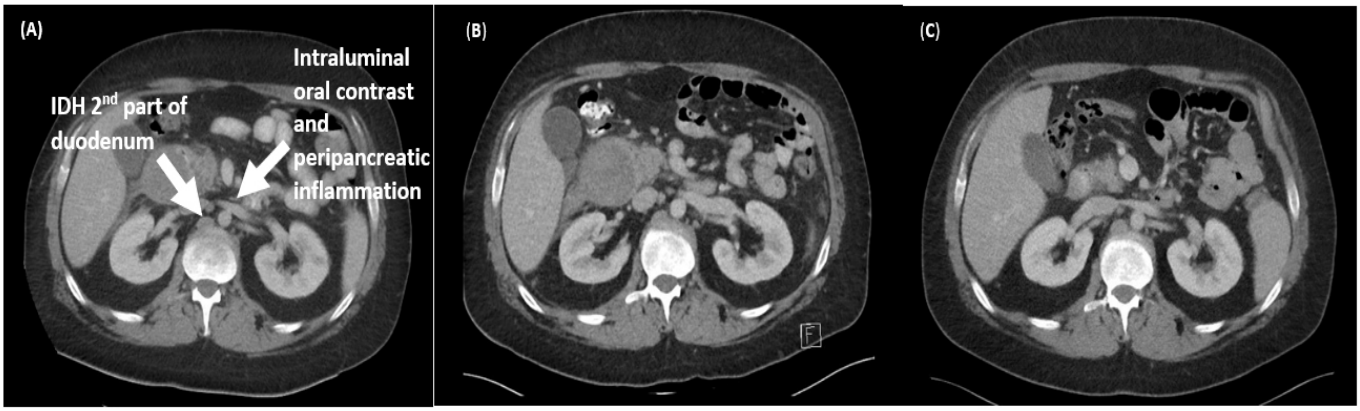

Figure 2 (A) Axial CT abdomen portal venous phase at presentation confirming acute IDH with associated pancreatitis compressing the 2nd part of the duodenum with oral contrast passing distally into jejunal loops. Inflammatory stranding of Gerota's fascia and free fluid in the subhepatic space (B) Interval inpatient CT abdomen with slight enlargement of IDF measuring 7.7cm in maximum dimension (C) Follow-up CT abdomen 2 months later confirming resolution of IDH

Spontaneous resorption of the IDH occurs in most clinical scenarios. Serial imaging with ultrasound or CT abdomen should be considered to ensure resolution of haematoma and exclude malignancy. In the event of an expanding IDH, endoscopic decompression is a minimally invasive technique to evacuate the haematoma into the lumen of the duodenum to relieve gastric outlet obstruction (5). Active haemorrhage can be managed with arterial embolization. However, there is a risk of duodenal necrosis. Operative management should be considered in a haemodynamically unstable patient, or perforated ulcer.

Pancreaticoduodenectomy is only indicated in situations of non-viable bowel(4).

Conclusion

IDH is a rare occurrence in pancreatitis. Although the pathophysiology of primary or secondary IDH from pancreatitis differs, the management of IDH remains the same in both entities. In most patients, conservative management is sufficient, while radical surgery is only reserved for unstable patients, or in perforated viscus.

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Learning Points:

- Intraduodenal haematomas can be a cause of or be caused by acute pancreatitis.
- If patients are clinically stable, intraduodenal haematomas can be conservatively managed.
- Surgical intervention should only be considered in a haemodynamically unstable patient.