Case report

Embolisation of metachronous pseudoaneurysms complicating chronic pancreatitis

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Background

Pseudoaneurysm bleeding is a well-described complication of chronic pancreatitis. Reports of embolisation therapy for metachronous pseudoaneurysms in this condition are rare. We present such a patient and describe his management.

Case outline

A 51-year-old man with chronic pancreatitis who presented with recurrent occult major gastrointestinal bleeding underwent angiography on two separate occasions, 2 years apart. Initial intervention revealed the origin of the coeliac axis to be occluded or absent, and a splenic artery (SA) aneurysm, feeding via the superior mesenteric artery, was embolised. Subsequent angiography after a major bleed showed a new pseudoaneurysm in the head of pancreas feeding from an aberrant hepatic artery, which was embolised. The second angiogram confirmed persistent occlusion of the SA aneurysm and 6 months follow-up showed no evidence of recurrence of the second aneurysm.

Discussion

The resolution of these metachronous pseudoaneurysms by angiographic embolisation attests to the validity of this approach as potentially definitive and repeatable therapy.

Keywords

chronic pancreatitis, pseudoaneurysm, embolisation

Introduction

Gastrointestinal bleeding occurs in about 2.5% of patients with chronic pancreatitis [1]. The commonest sources are gastritis, peptic ulcer and oesophageal varices, which can be excluded on routine upper endoscopy. Visceral vessel erosion is often occult, and here endoscopy often fails to establish the source of bleeding. In these cases, bleeding occurs when pseudoaneurysms form by autodigestion of arterial walls and a perivascular leak communicates with a hollow viscus, or from erosion of a pseudocyst into a visceral artery with pancreatic ductal communication (haemosuccus pancreaticus) [2]. Angiography is required for the diagnosis, and embolisation is both feasible and successful [3, 4], although its use as the definitive therapeutic modality for long-term control has been questioned [5]. We detail the success of the angiographic approach, despite anomalous arterial anatomy, in a patient with metachronous pseudoaneurysms of the pancreas, presenting after an interval of 2 years.

Case report

A 51-year-old man presented with a 2-day history of haematemesis and melaena. He had a long history of alcohol dependence. The admission haemoglobin level was 0.90 mmol/L (5.8 g/dl), and a plain abdominal radiograph revealed calcifications in the pancreatic head and body. Upper endoscopy was normal. Selective angiography showed non-visualisation of the origin of the coeliac axis. Superior mesenteric artery (SMA) injection revealed an anomalous origin of a dominant hepatic artery (HA) proximal to a hypertrophied pancreaticoduodenal (PD) arcade providing collateral filling of a large splenic artery (SA) pseudoaneurysm (Figure 1). Fibred platinum micro-coils were deployed via the PD into the proximal splenic artery adjacent to the aneurysm neck with the aid of a 3.0/2.7F microcatheter. Post-embolisation runs demonstrated good filling of the left gastric (LG) and gastro-epiploic (GE) arteries with collateral filling of splenic hilar arteries, but no retrograde or antegrade
opacification of the aneurysm (Figure 2). The patient was subsequently lost to follow-up.

He returned to hospital 2 years after initial admission with melena and a haemoglobin of 0.81 mmol/L (5.2 g/dl). Upper endoscopy demonstrated a chronic duodenal ulcer with no stigmata of bleeding. After transfusion he was commenced on a proton pump inhibitor and Helicobacter pylori eradication therapy and was discharged. Five days later he was admitted with an identical history and a haemoglobin level of 0.65 mmol/L (4.2 g/dl). There was now an obvious pulsatile mass in the right upper quadrant. Colour flow Doppler (CFD) demonstrated an aneurysm in the pancreatic head region and a normal portal vein. Repeat angiography confirmed persistent embolisation of the splenic artery aneurysm performed 2 years earlier, with a new pseudoaneurysm in the region of the pancreatic head arising from the anomalous HA (Figure 3). Because of the proximity of the aneurysm neck to the SMA, fibred stainless steel coils were deployed in the proximal HA across the aneurysm neck with the aid of a curved balloon catheter temporarily occluding the parent artery (HA) ostium. Post-embolisation runs confirmed non-filling of the aneurysm and satisfactory coil placement without compromise of the SMA (Figure 4). A 48-h follow-up CFD before discharge demonstrated complete thrombosis of the pseudoaneurysm. Six months later he remained asymptomatic with no indication of ongoing gastrointestinal bleeding.

**Discussion**

The operative mortality rate with bleeding pseudo-

![Figure 1. The splenic artery aneurysm is seen. Superior mesenteric artery selection with catheter tip in the hypertrophied pancreaticoduodenal (PD) arcade demonstrates the aneurysm neck (AN) arising from the splenic artery (SA).](image1)

![Figure 2. Successful deployment of coils with preservation of the left gastric artery (LG) was achieved. Despite retrograde filling of the splenic hilar vessels via the gastroepiploic arcade (GE), there is no retrograde aneurysm filling via the distal splenic artery.](image2)

![Figure 3. The metastatic hepatic artery aneurysm (AN) is demonstrated. Proximal selection of the superior mesenteric artery (SMA) again shows the hypertrophied inferior pancreaticoduodenal vessel (IPD) as well as the anomalous proximal origin of the hepatic artery (HA).](image3)
aneurysms in the emergency setting has been reported to be as high as 33% [6]. The vessels most commonly implicated in descending order of frequency are the splenic, pancreaticoduodenal and gastroduodenal arteries [1].

Colour flow Doppler may be diagnostic but can be misleading if there is complete thrombosis with no flow in the aneurysm at the time of scanning [7]. While contrast-enhanced CT may suggest pseudoaneurysm as in this case, angiography is recommended for those in whom endoscopy fails to reveal the source of haemorrhage. Earlier reports used angiography simply as a diagnostic manoeuvre, advocating surgical control of bleeding in all patients [2, 6]. In a more recent publication, De Perrot and colleagues also recommended resectional surgery over transcystic ligation or embolisation, which they regard as temporary manoeuvres [5], but their conclusion regarding chronic pancreatitis is suspect. Coeliacomesenteric angiography was undertaken in eight patients including successful embolisation in two of three patients with acute pancreatitis. Why embolisation was not attempted in the other five patients is not stated. Furthermore, adopting De Perrot’s surgical approach in this patient would have entailed distal pancreatectomy and splenectomy, which is unlikely to have prevented the later aneurysm which developed in the head.

Successful transcatheter embolisation was first reported by this institution in 1984 [3]. Four patients with alcohol-related pancreatitis complicated by bleeding pseudocysts were managed by gelfoam embolisation. This is our first-line therapy and is now frequently reported in the literature. Technical reasons may preclude embolisation for some aneurysms, particularly in the head and with more than one feeding vessel, but Golzarian and associates [4] recently described a 100% success rate with 13 symptomatic aneurysms. Repeated angiography has only been reported in two patients for early recurrent bleeding occurring within a month of apparently successful embolisation [4]. These cases may indicate a failure to identify all potential sites for embolisation, rather than the development of true metachronous pseudoaneurysms, as in the present report. Both reported cases were successfully managed by repeat embolisation.

The successful long-term embolisation of the original splenic artery aneurysm in this patient attests to the durability of the technique. Further, we believe that this case reaffirms that angiography is the gold standard for diagnosis of vascular lesions in pancreatitis and is both a first-line and repeatable therapeutic intervention, which can avoid the daunting open surgical approach.

References