**True giant aneurysm of gastroduodenal artery**

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**Introduction**

Aneurysms affecting the splanchnic arteries are very rare, while the commonest location is splenic artery (10.4%); the gastroduodenal artery (GDA) remains the rarest site representing only 1.5% of more than 3000 reported splanchnic artery aneurysms (SAA) in literature since 1960.\(^1,2\) Though aneurysms of visceral arteries are rare, awareness and early treatment are important because the common presentation of aneurysmal rupture is associated with a high mortality rate. Majority of the GDA aneurysms documented in the literature are pseudoaneurysms associated with complications of acute or chronic pancreatitis. True giant GDA aneurysms are extremely rare, although there is no standard size criteria to define a giant GDA aneurysm, the term has been used in literature to describe aneurysms above 5 cm in size as shown in Table 1. Several cases of successful coil embolization of GDA pseudoaneurysms were already reported but we report the first case of successfully treated true giant GDA aneurysm by coil embolization via superior mesenteric artery and review literature on this rare presentation.\(^3,4,11\)

**Case report**

A 79-year-old female presented with a history of gastritis. She was a non-smoker and did not drink alcohol. Physical examination and blood investigations were unremarkable. An oesophagogastroduodenoscopy (OGD) revealed a displacement of the duodenum by a pulsating mass. A further abdominal computerised tomographic (CT) scan showed a 6-cm aneurysm at the origin of gastroduodenal artery from the common hepatic artery. Significant atheromatous changes were noted in aorta and visceral arteries with probable occlusion of origin of celiac trunk. There were no radiological signs of pancreatitis. A percutaneous transcatheter coil embolization (PTCE) was planned and preliminary digital subtraction arteriogram (DSA) confirmed the documented anatomy of GDA. Using co-axial technique 25 coils were delivered into the aneurysm via SMA...
and there was a good technical result with no immediate complications (Fig. 1). At 3 weeks follow-up her liver function tests were normal and an abdominal CT scan showed effective embolization of GDA aneurysm with no significant revascularization or ischemic changes in liver parenchyma.

Discussion

True gastroduodenal arterial aneurysms are uncommon but clinically important pathologic lesions accounting for only 1.5% of around 3000 visceral artery aneurysms documented in the literature. Periarterial inflammation caused by pancreatic enzymes secondary to pancreatitis is an important cause of GDA pseudoaneurysms while atherosclerosis, autoimmune diseases like Systemic lupus erythematosus, Wegener’s granulomatosis, Polyarteritis nodosa and an extremely rare condition of congenital absence of celiac axis are the possible etiologies of true GDA aneurysms.5,6 Quandalle et al.7 suggested that as the gastroduodenal arteries are the main collateral pathway between the celiac axis and the SMA, an increased blood flow in as compensation for an occlusion or stenosis of the SMA or celiac axis may cause a gastroduodenal artery aneurysm. The clinical presentation of GDA aneurysms is varied and non-specific, with recent wide application of sophisticated imaging modalities in the diagnosis of various intra-abdominal diseases, the incidental diagnosis of these aneurysms has increased. Patients may present with symptoms such as a palpable pulsatile mass, or pressure on surrounding structures producing pain, jaundice, hemorrhage and gastric outlet obstruction or a few may be asymptomatic. The importance of these aneurysms is the risk of rupture and associated mortality with such occurrence. Fifty to sixty percent of peri-pancreatic artery aneurysms [Pancreaticoduodenal (PDA) and GDA] rupture with acute abdomen and shock as the common initial presentation.8 To date there is limited knowledge concerning the clinical presentation, outcome and best treatment as most authors report isolated cases and there are no large studies from any institutions with substantial experience with true GDA aneurysms. CT angiography by dual phase spiral/helical scan, Doppler sonography and magnetic resonance imaging provide the best tools for the diagnosis and treatment planning. The role of surveillance in the management of visceral artery aneurysms (VAA) remains controversial. GDA aneurysms should be treated regardless of size and symptoms, although the risk is higher for large-diameter aneurysms rupture is also frequent for small-diameter aneurysms.9 VAA can be treated by surgical or non-surgical methods. Endovascular techniques have many possible advantages such as accurate anatomic localization of the aneurysm, easy assessment of collateral circulation, ability to perform under local anesthesia, decreased postoperative complications including ileus, intra-abdominal sepsis, bleeding, wound infection and shorter hospital stays. However, these techniques are not without risks, reported complications include end organ infarction, sacrifice of the visceral vessel, recurrence of the aneurysm, infection, arterial disruption, contrast nephropathy, embolism and access site hematomas. Although GDA aneurysms are sometimes readily accessible

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Reported cases of true giant GDA aneurysms</th>
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<tbody>
<tr>
<td>Year (Reference)</td>
<td>Age</td>
</tr>
<tr>
<td>197611</td>
<td>57</td>
</tr>
<tr>
<td>199812</td>
<td>85</td>
</tr>
<tr>
<td>20015</td>
<td>77</td>
</tr>
<tr>
<td>Present case</td>
<td>79</td>
</tr>
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US = ultrasound, CT = computerised tomographic, and OGD = oesophagastroduodenoscopy.

Figure 1

Post-embolisation of PTCE by co-axial technique to post coil embolisation of GDA aneurysm.
behind the duodenum for surgical treatment the presence of a large retroperitoneal hematoma due to rupture may make it difficult. Endovascular techniques are used to treat most visceral artery aneurysms regardless of the clinical presentation, etiology, or location with reduced mortality and morbidity. PTCE has been reported to be effective and most commonly used technique for pseudoaneurysms of GDA. Due to their relative advantages endovascular procedures should be the initial treatment of choice for GDA aneurysms. Follow-up imaging is necessary to detect recurrence, endoleak or end organ ischemia.

Conclusion

True giant gastroduodenal artery aneurysms are extremely rare, there is only a limited knowledge concerning the clinical presentation, outcome and best treatment. The importance of these aneurysms is the risk of rupture and associated mortality. In view of their relative advantages PTCE can be used as a first line treatment for GDA aneurysms and surgery should be reserved only for cases not amenable for PTCE.

References


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