Splenic artery aneurysm: pre-rupture diagnosis is life saving

Muwaffaq Mezeil Telfah

DESCRIPTION
A 55-year-old woman presented to the outpatient surgical clinic with a history of recurrent attacks of left upper quadrant pain over the last year. Each bout of pain lasted for less than 24 h and was stabbing in nature. The pain interfered with the patient’s breathing and affected her left shoulder; it was associated with nausea and, occasionally, vomiting. The patient had a normal appetite, no weight loss and no change in bowel habits. She had received several courses of analgesics and antispasmodics on an assumption of left renal colic and irritable bowel syndrome. She was otherwise healthy with no relevant medical or surgical history. She neither smokes nor consumes alcohol.

During the latest attack, the patient developed severe, persistent, mainly upper abdominal pain that referred to the left shoulder, and required hospital admission in the surgical unit for further assessment. On examination, she was pale and overweight (body mass index=29.4). Her pulse was 100/min, regular and of good volume. Blood pressure was 140/70 mm Hg, temperature 37.2°C and respiratory rate 24 breaths/min. Abdominal examination revealed tenderness, guarding and rigidity over the upper abdomen and mainly on the left upper quadrant. There were no palpable masses or organomegaly.

A full blood count showed haemoglobin level of 13.1 g/dl, white cell count 11×10^9/L, platelets 250×10^9/L and the erythrocyte sedimentation rate was 10 mm/h. General urine examination and serum amylase levels were normal. All other laboratory tests were within the normal range. Chest X-ray in erect position showed normal lung fields and no air under the diaphragm. Ultrasound scan showed an ill-defined cystic mass (low echo-texture) at the splenorenal area suggesting a complex cystic mass related to the tail of the pancreas. Contrast-enhanced CT revealed a well-defined oval lesion (41 mm×60 mm) seen at the splenic hilum massively enhancing postcontrast, suggestive of aneurysmal dilatation of splenic artery with very thin wall (figure 1). CT angiography confirmed the diagnosis of aneurysm at the distal end of the splenic artery with no thrombus within, and a dilated tortuous splenic artery (figure 2). We were concerned that this might be a case of splenic artery aneurysm (SAA) with impending rupture, which usually explains the clinical presentation of abdominal pain. Informed consent was taken and urgent surgery performed.

Laparotomy using an upper abdominal midline incision was performed. There was a tortuous course of splenic artery that ended with a thrilled, fragile, compressible mass at the hilum of spleen with a very thin wall (impending rupture), as shown in figure 3. Proximal vascular control using an arterial clamp (bulldog) was applied at the upper border of the pancreas for secure mobilisation of the spleen and to avoid catastrophic haemorrhaging. A splenectomy was performed together with excision of aneurysmal sac (figure 4). The patient had an uneventful postoperative course and was discharged on the sixth postoperative day. The patient was pain free at regular follow-up.

SAA is a rare and life-threatening condition as it has a definite risk of rupture, especially if it has a diameter of more than 2 cm.1 It is either symptomatic or, more commonly, asymptomatic and is therefore, in most cases, accidentally discovered during imaging. Symptoms include acute presentation with hypovolaemic shock and acute abdomen secondary to intra-abdominal haemorrhage of rupture. On the other hand, the symptoms of an unruptured aneurysm include epigastric pain,2 such as a left upper quadrant pain referring to the left shoulder, as in this case.

As seen in our case, SAA represents a diagnostic challenge clinically (misinterpreted as renal colic based on a clinical background of recurrent attacks) and also radiologically (as a cystic mass lesion related to the pancreas) with possible unfavourable consequences as a result of misdiagnosis.3 Every attempt should be made to diagnose and treat symptomatic splenic aneurysm early, before rupture, as mortality can be very high (up to 75% following rupture).4

In our case, the aneurysm was located in the distal third of the splenic artery, so the spleen could not be preserved; a splenectomy and aneurysmectomy were performed using the traditional open approach.

A number of treatment plans have been reported but open surgery is still the gold standard.4 The endovascular management is a non-invasive
Figure 2  CT angiogram.

Figure 3  Operative finding of a splenic artery aneurysm within the hilum of spleen with very thin wall (impending rupture).
approach performed under local anaesthesia. However, it is only suitable for select patients. Splenic blood flow might be impaired following endovascular treatment, which could result in infarction or splenic malfunction (post-embolisation syndrome). Patients need careful imaging follow-up to ensure permanent exclusion of the aneurysm.

Pietrabissa et al, as well as other authors, have reported the use of a laparoscopic approach for management of SAAs. Using this approach, the aneurysm can be excluded by clipping or ligation of the afferent and efferent blood vessels or excision of the aneurysmal sac without restoration of continuity of the splenic artery. The spleen will be dependent on the collateral circulation from the short gastric vessels. Sometimes a splenectomy is unavoidable due to inadequate residual blood flow to the spleen; it can be accomplished using laparoscopy without conversion. Laparoscopic management can be optimised using intraoperative coloured Doppler ultrasonography monitoring of blood flow following exclusion or ligation to avoid an unnecessary splenectomy. Although laparoscopic treatment is reserved for distally located aneurysms, it is difficult to manage and entails a high risk of a subsequent splenectomy.

Endovascular and laparoscopic approaches represent viable options but they require specialised equipment and expertise. However, in the absence of such facilities, equipment and skills for performing advanced treatments, and the urgency of the case reported, we found the open approach a safe and effective alternative.

A multidisciplinary approach proves very effective in offering patients optimal treatment, whether endovascular, laparoscopic or open, for visceral aneurysms.

Learning points

▸ A splenic artery aneurysm, although rare, should be considered in the differential diagnosis of left upper quadrant abdominal pain with referred left shoulder pain.
▸ Early diagnosis, using advanced imaging techniques, is crucial to prevent life-threatening rupture.
▸ Open splenectomy and aneurysmectomy are safe treatment options for aneurysm of the distal third of the splenic artery with impending rupture, as it is sometimes not possible to preserve the spleen.
▸ A number of treatment options are available for splenic artery aneurysms, such as open, laparoscopic and endovascular surgery. The local expertise, available facilities and urgency of the case will determine the safest option.
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Competing interests

None.

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REFERENCES