CASE REPORT

Ruptured jejunal artery aneurysm

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SUMMARY

Visceral artery aneurysms (VAAs), unlike aortic aneurysms, are very rare, but are also a potentially lethal vascular disease. Jejunal artery aneurysms only account for less than 3% of VAAs, but have a 30% risk of rupture, with 20% death rate, presenting with only few and vague symptoms. We report the case of a 76-year-old man presenting at the emergency department (ED) with a crampy epigastric pain and vomiting. An ultrasound performed diagnosed free abdominal fluid and immediate CT scan diagnosed jejunal artery aneurysm spontaneously rupturing, followed by hypovolaemic shock. Emergent surgery was undertaken, and aneurysmectomy, followed by partial enterectomy with primary anastomosis were performed, because of segmentary jejunal ischaemia. The patient's recovery was unremarkable. High level of suspicion, rapid diagnosis capability and prompt surgical or endovascular intervention, as well as an effective teamwork in the ED are critical to avoid the devastating consequences of ruptured VAAs.

BACKGROUND

Visceral artery aneurysms (VAAs) consist of segmentary dilations of visceral branches of the abdominal aorta¹ and, although infrequent (incidence 0.01–2% on autopsies²), are an important group of vascular diseases because 25% of them are diagnosed as surgical emergencies.³

Splenic (60%), hepatic (20%), superior mesenteric (5.5%), coeliac (4%) and gastroduodenal (4%) aneurysms account for more than 90% of VAAs.³

Aneurysms of jejunal, ileal and colic arteries only account for 3% of VAAs, and have a 30% risk of rupture, with 20% death rate.^{3–5}

Usually, rupture occurs into the gastrointestinal tract and not to the abdominal cavity.^{3–4}

CASE PRESENTATION

We report the case of a 76-year-old man who developed a crampy abdominal pain, occasionally radiating to the back, for at least a week, accompanied on that day by postprandial vomiting. He had already been at the emergency department twice earlier, discharged with normal blood tests, abdominal x-ray and ECG.

His medical history included mechanical mitral valve replacement 10 years earlier (anticoagulated with warfarin), atrial fibrillation, arterial hypertension and depression. He denied any respiratory or urinary symptoms, change in bowel habits or signs of blood loss, as well as fever or history of trauma.

He presented with a painless facies, walking without limitations; conscious and oriented, feverless. Blood pressure was 133/70 mm Hg and HR 74 bpm. His abdomen was mobile with breathing,

Figure 1 CT-scan: ruptured jejunal artery aneurysm of 52 mm (coronal plane).

soft and depressible, with moderate epigastric tenderness, without rebound or guarding; without palpable masses.

Blood test were performed (haemoglobin (Hb) 11.9 g/dL, Ht 38%, leucocyte $11\,950 \times 10^3/\mu\text{L}$, C reactive protein 4 mg/dL, International Normalised Ratio 2).

An abdominal ultrasound was ordered and the radiologist, facing a medium volume hemoperitoneum of unknown aetiology, decided to perform CT scan. The CT scan revealed an aneurysm (52 mm) rising from a jejunal branch of the superior mesenteric artery and perisplenic, perihepatic and pelvic ($13 \times 10 \times 4$ cm) hemoperitoneum (figures 1–3).

Figure 2 CT-scan: ruptured jejunal aneurysm of 52 mm (transverse planes).

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Figure 3 CT-scan: ruptured jejunal aneurysm of 52 mm (transverse planes).

Our colleague immediately warned the surgical team and transferred the patient. On arrival, the patient already presented hypotension (82/44 mm Hg), tachycardia (130 ppm), profuse sweating and the respiratory rate of 24 bpm (signs of hypovolaemic shock).

TREATMENT

Emergent laparotomy revealed hemoperitoneum (>2l) and active bleeding from a ruptured jejunal artery aneurysm (JAA; viable jejunum). Bleeding was controlled by compression, until superior mesenteric artery and vein were identified. Then, we performed the ligation of vessels responsible for the aneurysm, distally to the main trunks.

The aneurysm of 6 cm was exposed through the mesojejunum, dissected and completely resected (figure 4).

As the jejunal loop started to become ischaemic, segmentary enterectomy with primary anastomoses was performed (since the patient was already stable).

The patient was transfused with three units of packed red blood cells, received three units of prothrombin complex concentrate and vitamin K to reverse anticoagulation.

No other vascular malformations or any alterations were found.

OUTCOME AND FOLLOW-UP

The patient's recovery was unremarkable, and he was discharged at the fifth postoperative day, with normal bowel function and Hb value of 10.4 g/dL.

Figure 4 Intraoperative photography: A, aneurysm (during aneurysmectomy); arrow, superior mesenteric artery.

Histopathological examination confirmed the diagnosis of ruptured aneurysm with tortuous vessels with thickened wall, congested vascular ends and adjacent areas of haemorrhagic infiltration; enteric segment without malignancy.

DISCUSSION

Although the number of case reports of VAAs has increased, because of the availability of imaging exams, reports concerning jejunal VAAs have remained few and sporadic.² JAAs occur equally among men and women,⁶ are more frequent in patients above 60 years old (as it is in this case), are usually solitary and secondary to an acquired defect arising from the tunica media (segmental arterial mediolysis).^{7 8} Other proposed aetiologies for VAAs are infection, atherosclerosis, fibrodysplasia, arteritis, congenital anomalies and trauma.^{3 5}

Clinical diagnosis of VAAs is difficult, since most of the patients only present with vague abdominal discomfort (deriving from mass effect of an expandable haematoma or from bowel ischaemia), as in this case. Therefore, it is not uncommon that the aneurysm is only discovered after rupture, with hypovolaemic shock, leading to an increased mortality.⁹ The initial diagnosis in an emergent situation depends on the suspicion. The best imaging method, in a haemodynamically stable patient, is the CT scan.¹⁰

The treatment of a ruptured VAA is emergent laparotomy, aneurysmectomy with ligation of vessels or graft interposition, occasionally requiring partial enterectomy. Aneurysmectomy was performed ligating the anastomosing vessels as close to the aneurysm as possible, in the attempt of avoiding any enterectomy, which unfortunately had to be performed, but was uneventful.

Endovascular treatment, consisting of superselective catheterisation and embolisation, has also been described, even in ruptured VAAs.^{11 12} It can be performed in haemodynamic unstable patients, particularly in those with multiple comorbidities, but the risks of intestinal infarction, stenosis and perforation limit its use^{11 13} as well as its limited availability in such short notice. In this case, endovascular treatment was not considered because the vascular team was not immediately available.

Learning points

- Visceral artery aneurysms (VAAs) are a rare potentially lethal vascular disease.
- Jejunal artery aneurysm account for 3% of VAAs, are solitary, more frequent in elderly and secondary to segmental arterial mediolysis.
- High level of suspicion, rapid diagnosis capability and prompt surgical or endovascular intervention, as well as an effective teamwork in the emergency department are critical to avoid the devastating consequences of ruptured VAAs.

Competing interests None.

Patient consent Obtained.

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REFERENCES

- 1 Sandri JL, Souza Netto JM. Aneurismas das artérias viscerais. In: Bonamigo TP, Von Ristow A, eds *Aneurismas*. Rio de Janeiro: Dilivros, 2000:230–43, cap 25.

- 2 Tulsyan N, Kashyap VS, Greenberg RK, *et al.* The endovascular management of visceral artery aneurysms and pseudoaneurysms. *J Vasc Surg* 2007;45:276–83.
- 3 Miranda F Jr. Aneurismas viscerais e periféricos. In: Pitta GBB, Castro AA, Burihan E, eds. *Angiologia e Cirurgia Vascular: guia ilustrado*. Maceió: UNICSAL/ECMAL & LAVA, 2003:1–10.
- 4 Brito CJ. Aneurismas Periféricos. In: Maffei FHA, Lastória S, Yoshida WB, Rollo HA, eds *Doenças Vasculares Periféricas, Segunda Ed.* Medsi, 1995:557–76, cap 33.
- 5 Izukawa NM. Aneurismas das artérias viscerais. In: Puech-Leão P, Kauffman P, eds *Aneurismas Arteriais*. São Paulo: Fundo editorial BYK, 1998:233, cap 22.
- 6 Stanley JC. Mesenteric arterial occlusive and aneurysmal disease. *Cardiol Clin* 2002;20:611–22.
- 7 Slavin RE, Gonzalez-Vitale JC. Segmental mediolytic arteritis: a clinical pathologic study. *Lab Invest* 1976;35:23–9.
- 8 Michael M, Widmer U, Wildermuth S, *et al.* Segmental arterial mediolysis: CTA findings at presentation and follow-up. *Am J Radiol* 2006;187:1463–9.
- 9 Kurdal AT, Cerrahoglu M, Iskesen I, *et al.* Superior mesenteric artery branch-jejunal artery aneurysm. *Interact Cardiovasc Thorac Surg* 2010;11:859–61.
- 10 David VS, Sullivan KL, Carter WB, *et al.* Role of selective arteriography in the diagnosis of a ruptured middle colic artery aneurysm. *Cardiovasc Intervent Radiol* 1994;17:167–9.
- 11 Naito A, Toyota N, Ito K. Embolization of a ruptured middle colic artery aneurysm. *Cardiovasc Intervent Radiol* 1995;18:56–8.
- 12 Sachdev U, Baril DT, Ellozy SH, *et al.* Management of aneurysms involving branches of the celiac and superior mesenteric arteries: a comparison of surgical and endovascular therapy. *J Vasc Surg* 2006;44:718–24.
- 13 Ku A, Kadir S. Embolization of a mesenteric artery aneurysm: case report. *Cardiovasc Intervent Radiol* 1990;13:91–2.

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