Presentation of a large jejunal artery aneurysm: Management and review of the literature

Ana María Minaya-Bravo a,⁎, Cristina Vera-Mansilla b, Fernando Ruiz-Grande c

a General and Digestive Surgery Department, Henares Teaching Hospital, Coslada, 28822, Madrid, Spain
b General and Digestive Surgery Department, Don Benito-Villanueva de la Serena Hospital, 06400, Badajoz, Spain
c Vascular Surgery Department, Principe de Asturias Teaching Hospital, Alcalá de Henares, 28805, Madrid, Spain

Article history:
Received 25 February 2018
Received in revised form 23 April 2018
Accepted 30 April 2018
Available online 12 May 2018

Keywords:
Aneurysm
Visceral aneurysm
Jejunal
Vascular
Splanchnic aneurysm

ABSTRACT

INTRODUCTION: Jejunal artery aneurysms (JAs) constitute less than 1% of all visceral artery aneurysms. They affect mostly men in their fifth decade. In the last years, the widespread of fine cut fine image techniques has increased the number of JAs diagnosed incidentally. The first case was reported by Levine in 1944. Since then, only a half of hundred cases have been reported. There is a lack of consensus of management of intact JAs because of the low number of cases published. We present the largest JAA reported in the English literature up to our knowledge.

PRESENTATION: We report a 49-year-old woman with a 4 × 5 cm. intact jejunal artery aneurysm found incidentally in a CT. It rose from the first jejunal branch of superior mesenteric artery without signs of rupture. She underwent elective surgery and the aneurysm was completely excised.

DISCUSSION: Causes of JAs include congenital, atherosclerosis or degenerative process. Their rate of rupture depends on location, size and underlying disease and it reaches 10–20% for all visceral artery aneurysms. Risk factors of rupture include pregnancy, hyper-flow situations and connective diseases. Most of cases in the literature presented rupture at the time of diagnosis. JAs are usually treated following the recommendations for visceral artery aneurysms, so intact JAs greater than 2 cm. and those causing symptoms should be treated. Treatment includes surgery, embolisation or stent. Surgery is the preferred management for emergency settings.

CONCLUSION: JAs are extremely rare and constitute only 1% of all visceral aneurysms. They are a life-threatening condition.

© 2018 The Author(s). Published by Elsevier Ltd on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

1. Introduction

Visceral artery aneurysms (VAs) are a rare condition, with an incidence rate of 0.1–2% [1]. They are usually referred to celiac trunk, superior mesenteric artery or inferior mesenteric artery and their branches. Renal artery aneurysms are not considered under VAA category because of their different origin [2].

The risk of rupture reaches 10–20% with a mortality rate ranging from 10 to 20% depending on location, size and underlying diseases [3]. As a result, they are a life-threatening condition and require especial attention. They most frequently affect men in their fifth decade of life [2].

More frequent locations include splenic artery (60%) followed by hepatic artery (20%), superior mesenteric artery (5%), celiac trunk (4%) and branches of superior mesenteric artery (3–5%). Jejunal artery aneurysms (JAs) account for 1% of all VAs [2,4,5].

Although pathophysiology remains uncertain, some causes have been postulated: congenital condition, atherosclerosis, trauma and systemic diseases [4].

In recent years, the improvement in fine-cut computed tomography scans has increased the number of VAs found incidentally.

In English literature, only a half of hundred true JAs have been reported, being most of them case reports or short series. In addition, there is a lack of consensus of management for intact VAs [6].

We report a case of a 4 × 5 cm JAA in a 49 year old woman, diagnosed incidentally that was successfully treated with surgical excision of the aneurysm in the Vascular Surgery Department of our hospital. This is the largest JAA reported in the English literature up to our best knowledge.

This paper has been reported in line with the SCARE criteria [7].
2. Presentation of a case

We present the case of a 49-year-old woman with no medical history that was admitted to Vascular Surgery Department due to a jejunal artery aneurysm found incidentally in a computed tomography performed to evaluate epigastrium hernia. The patient reported neither abdominal pain nor lower digestive haemorrhage.

In physical examination, she was alert, apyrexial, with normal blood pressure (121/60) and 70 heart beats per minute. Her abdomen was soft, depressive and a pulsatile mass was palpable.

Blood test revealed haemoglobin 14.1 g/dL and leucocyte count of 8 × 10⁹/L.

Contrast-enhanced computed tomography revealed a jejunal artery aneurysm of 4 × 5 cm, across rising from the first jejunal branch of superior mesenteric artery. Neither signs of rupture nor free liquid were shown. No other visceral aneurysms were found. Figs. 1–3.

Due to size, location and the conditions of our institution we chose surgical treatment. The patient underwent elective surgery. A middle laparotomy was performed. A 4 × 5 cm. true aneurysm depending on first jejunal branch was evidenced, it was intact without signs of rupture. The rest of the abdominal cavity did not present any other alteration. The aneurysm was dissected and completely excised, inflow and outflow vessels were ligated close to the aneurysm, intestinal viability was assessed and resection was not required Fig. 4.

The postoperative period was uneventful and she was discharged 5 days later. Currently, the patient is doing well and she does not present any symptom.

3. Discussion

In 1770, Beaussier reported the first VAA affecting the splenic artery found out in an autopsy [8].

Later, in 1871, Quincke described a hepatic artery aneurysm causing the classical triad of abdominal pain, haemophilia and obstructive jaundice [9].

Eventually, in 1944, Levine described the first jejunal artery aneurysm in a 18 year-old woman that was successfully treated with surgery [8,9].

We highlight that JAA must be distinguished from pseudo-aneurysms as their origin and treatment is thoroughly different. Pseudoaneurysms or false aneurysms are the result of a wall injury with blood leak contained by adventitia or surrounding tissues. However, true aneurysm is a focal dilatation that exceeds at least 50% of its diameter and affects all the layers of the artery [10]. This paper is only referred to true JAA.

Although the origin of JAA remains uncertain, congenital is the most common cause followed by connective diseases, atherosclerosis and mycotic aneurysms resulting from haematogenous seeding [2,11]. The risk of rupture depends on location, size and aetiology, being connective disease (Ehlers-Danlos type IV) and hyper-flow situations (pregnancy and portal hypertension) strong risk factors of rupture [2].

We report a case of true JAA without risk factors for VAAs.
Most cases of JAAs showed some type of symptom at diagnosis. This differs from the rest of VAAIs that are usually asymptomatic at the moment of diagnosis. Most common symptoms of JAAs include abdominal pain, lower digestive haemorrhage and shock [4]. Also, the number of ruptured JAAs reported is high, reaching 60%. On contrast, the percentage of rupture for VAAIs is approximately 15–20% [3,4]. This could be explained because intact JAAs may not have been reported.

It is commonly accepted that all symptomatic and asymptomatic VAAIs greater than 2 cm of diameter should be treated. However, this limit of 2 cm has been questioned recently.

Corey et al. reported a study of natural evolution of 264 splanchnic VAAIs over a 20-year period and observed that 91.3% of all VAAIs and all JAAs remained stable; as a consequence, they concluded that the cut-off could be established at 2.5 cm. However, the number of JAAs included in this study is very low [5].

Treatment is also mode of debate and varies regarding the different institutions.

Surgical treatment consists of excision, ligation or vein graft. Occasionally intestinal resection could be required.

Moreover, embolisation and stents are new and promising techniques for the treatment of VAAIs. Embolisation is performed using microcoils or vascular plugs. Stents can be placed across the aneurysm achieving successful results; different stents can be used: multilayer stents or self-expanding covered stent. Large series have demonstrated the benefit of endovascular treatment with a shorter hospital stay and lower mortality [12].

However, in the case of JAAs, embolisation can be a challenge because of tortuosity of the vessels, requiring a highly-specialised team.

In case of rupture, surgery seems to be the most used technique, although some authors have also described embolisation in emergency situations.

In our case, the size was the main factor to consider the need for treatment. Due to the lack of experience on embolisation of these type of aneurysms in our centre, we considered surgery as the best option. Moreover, the size of the aneurysm and tortuosity of the branches made us to consider embolisation too much challenging. Surgery was performed by a vascular surgeon. A middle laparotomy was performed. A 4 × 5 cm. true JAA was found with a base of 5 mm. The aneurysm was excised in bloc with ligation of inflow and outflow vessels; vascular reconstruction was not required because of collateral circulation and viability of intestine was assessed and considered adequate Fig. 4.

In conclusion, the decision surgery versus endovascular treatment depends on patient status as well as the availability of a high-skilled team for performing embolisation and the absence of long-term outcome with endovascular techniques.

4. Conclusion

To summarise, JAAs are a rare condition and constitute 1% of all VAAIs. All symptomatic JAAs and those intact greater than 2 cm. must be treated, although the 2 cm. size cut-off has been recently questioned and raised up until 2.5 cm. by some authors.

There are different options for treatment. Surgery is especially useful in emergency. On the other hand, endovascular techniques such as embolisation and/or stents are promising options that require an experienced team although long-term outcome reports are needed.

Conflict of interest

All authors declare “no conflict of interest “.
Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Ethical approval

Approval by ethical committee is not required for case reports in my institution.

Consent

Informed written patient consent was obtained for the publication of this case report.

Author contribution

Ana M Minaya-Bravo: study design, interpretation of data and final approval; Cristina Vera-Mansilla: collection of data, interpretation and final approval; Fernando Ruiz-Grande: study design, interpretation of data and final approval.

Registration of research studies

UIN3740.

Guarantor

Ana M Minaya-Bravo.

References

[1] R. Pulli, W. Dorigo, N. Troisi, G. Pratesi, A.A. Innocenti, C. Pratesi, Surgical treatment of visceral artery aneurysms: a 25-year experience, J. Vasc. Surg. 48 (2) (2008) 334–342.
[2] M.J. Van Rijn, S. Ten Raa, J.M. Hendriks, H.J. Verhagen, Visceral aneurysms: Old paradigms, new insights? Best Pract. Res. Clin. Gastroenterol. 31 (1) (2017) 97–104.
[3] R. Loffroy, S. Favelier, P. Pottecher, P.Y. Genson, L. Estivale, S. Gehin, et al., Endovascular management of visceral artery aneurysms: when to watch, when to intervene? World J. Radiol. 7 (7) (2015) 143–148.
[4] M.B. Pitton, E. Dappa, F. Jungmann, R. Kloeckner, S. Schotten, G.M. Wirth, et al., Visceral artery aneurysms: incidence, management, and outcome analysis in a tertiary care center over one decade. Eur. Radiol. 25 (7) (2015) 2004–2014.
[5] M.R. Corey, E.A. Ergul, R.P. Cambria, S.J. English, V.J. Patel, R.T. Lancaster, et al., The natural history of splanchnic artery aneurysms and outcomes after operative intervention, J. Vasc. Surg. 63 (4) (2016) 949–957.
[6] R.O. Larkin, V.S. Kasyap, Splanchnic artery aneurysms, in: J.L. Cronenwett, K.W. Johnston (Eds.), Rutherford’s Vascular Surgery, 8th ed., Elsevier Saunders, Philadelphia, 2014, pp. 2220–2235.
[7] R.A. Agha, A.J. Fowler, A. Saetta, I. Barai, S. Rajmohan, D.P. Oggil, for the SCARE Group, The SCARE statement: consensus-based surgical case report guidelines, Int. J. Surg. (2016).
[8] M. Beaussier, Sur un anevrisme de l’arteresplenique: dont les parois se sont ossifies, J. Med. Clin. Pharmacol. Paris 32 (1770) 157.
[9] H. Kehr, Der erste Fall von erfolgreichunterbundung der A. hepatica propriawegenAneurysma, Münch Med. Wochenschr 50 (1903) 1861–1867.
[10] Rutherford’s vascular surgery, in: Chapter Arterial Aneurysms, eighth edition, 2016.
[11] F. Ruiz-Grande, P. Magallón-Ortín, J. Jiménez-Cossío, Aneurismas infecciosos, in: J.M. Estevan-Solano (Ed.), Tratado de aneurismas, J. Uriach & Cia, Barcelona, 1997, pp. 503–520.
[12] J.H. Hemp, S.S. Sabri, Endovascular management of visceral arterial aneurysms, Tech. Vasc. Interv. Radiol. 18 (1) (2015) 14–23.

Open Access

This article is published Open Access at sciencedirect.com. It is distributed under the IJSRC Supplemental terms and conditions, which permits unrestricted non commercial use, distribution, and reproduction in any medium, provided the original authors and source are credited.