ROTURA DE FALSO ANEURISMA IDIOPÁTICO DA ARTÉRIA ESPLÉNICA – A PROPÓSITO DE UM CASO CLÍNICO

RUPTURED IDIOPATHIC SPLENIC ARTERY PSEUDOANEURYSM – A CASE REPORT AND LITERATURE REVIEW

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RESUMO

Introdução: Pseudo-aneurisma da artéria esplénica representa uma entidade clínica rara, sendo as etiologia mais frequentes as complicações de pancreatite (aguda ou crónica) ou de trauma abdominal. O Pseuso-aneurisma idiopático é excecionalmente raro, com apenas dois casos descritos na literatura. O objetivo deste artigo é apresentar um caso de rotura de pseudoaneurisma da artéria esplénica, tratado com sucesso por cirurgia endovascular.

Métodos: Foi realizada a seleção de dados clínicos relevantes da base de dados hospitalar e foi realizada uma pesquisa bibliográfica.

Resultados: O doente é um homem de 75 anos de idade sem história prévia de pancreatite, trauma ou cirurgia abdominal. Foi admitido no serviço de urgência com um quadro de toracalgia com irradiação interescapular com poucas horas de evolução. Ele referia também um quadro de intolerância alimentar com vómitos com 7 dias de evolução.

Na avaliação diagnóstica, uma angiotomografia computadorizada (AngioTC) foi realizada e revelou uma volumosa hérnia de hiato desconhecida e a ruptura um pseudoaneurisma da artéria esplénica com 25 mm de diâmetro com hemorragia ativa e várias coleções perianeurismáticas na sua dependência.

O doente foi encaminhado para a Angiosuite e após cateterização seletiva da artéria esplênica, a origem do pseudoaneurisma foi identificada, procedendo-se à embolização proximal e distal à sua origem com *coils*. O resultado final foi satisfatório com aparente embolização completa do pseudoaneurisma.

A angioTC foi repetido 8 dias após o procedimento, revelando embolização completa do pseudoaneurisma, sem evidência de hemorragia. As coleções peri-aneurismáticas permaneceram inalteradas em tamanho e identificaram-se àreas de enfarte esplénico a ocupar cerca de 50% do baço. O doente teve alta ao 10.º dia pós-operatório.

Conclusões: A cirurgia endovascular parece ser uma boa opção para o tratamento de pseudoaneurismas da artéria esplénica mesmo em rotura, com bons resultados em curto prazo. Neste caso, admitiu-se que o tratamento endovascular poderia ser uma ponte para cirurgia convencional com aneurismectomia e esplenectomia. No entanto, dada a boa evolução clínica pós-procedimento não se realizou mais nenhum procedimento. Atualmente, existe pouco consenso relativo a *follow-up* e os resultados a longo prazo são em grande parte desconhecidos.

Palavras-chave

Artéria esplénica; Falso-aneurisma; Procedimentos endovasculares

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ABSTRACT

Introduction: *Splenic artery pseudoaneurysms (SAP) represent a rare clinical entity typically caused by sequelae of pancreatitis or abdominal trauma. Unprovoked, spontaneous SAP are exceedingly rare, with only two other case reports in the literature up to date. In this paper we pretend to present a case of a ruptured idiopathic SAP successfully treated endovascularly.*

Methods: *Relevant medical data were collected from hospital database.*

Results: *The patient is a 75-year-old male with no past history of pancreatitis, abdominal trauma or abdominal surgery. He was admitted in the emergency department with thoracalgia with interscapular irradiation with few hours of evolution. He referred food intolerance with vomiting for approximately 7 days.*

In the diagnostic work-up, a computed tomography angiogram (CTA) was performed and revealed a previously unknown voluminous hiatus hernia and a ruptured 25 mm SAP with active bleeding into a 104x98 mm perigastric collection in the left hypochondrium extending to the thorax, a 34 mm peri-pancreatic and a 35 mm pararenal collection.

Urgent treatment was planned in the angiography suite, and after selective catheterization of the splenic artery, pseudoaneurysm origin was identified and embolized both proximally and distally with coils. The end result angiogram was apparently successful.

CTA was repeated and revealed complete embolization of the pseudoaneurysm, with no evidence of bleeding. Peri-aneurysmatic collections remained unchanged in size and splenic infarction was evident in 50% of parenchyma. He was discharged 10 days after the initial procedure.

Conclusions: *Endovascular surgery seems a good option for SAP even in rupture, with good short-term results. In this case, it was admitted that it could be a bridge to open surgery with aneurysmectomy and splenectomy. However, given the good clinical recovery post-embolization, no further surgery was considered. Nowadays there is little consensus on follow-up, and long term results are largely unknown.*

Keywords

Splenic Artery (MeSH Term); Aneurysm, False (MeSH Term); Endovascular Procedures (MeSH Term);

INTRODUCTION

Splenic artery pseudoaneurysm (SAP) is a rare entity with fewer than 200 cases reported in the literature.[1] *The most common risk factors are pancreatitis (either chronic or acute), pancreatic pseudocysts and abdominal trauma. Unprovoked, spontaneous SAP are exceedingly rare, with only two other case reports in the literature.*[2, 3]
In this case report we pretend to present a case of an idiopathic SAP treated in rupture with endovascular surgery.

METHODS

Relevant medical data were collected from hospital database and a review of relevant literature was performed.

CASE REPORT

The patient is a 75-year-old male with a previous history of hypertension, hypercholesterolemia and coronary artery disease. There was no previous history of pancreatitis, either acute or chronic. Nor there was history of abdominal trauma, either recent or ancient, or abdominal surgery.
He was admitted in the emergency department (ER) with thoracalgia with interscapular irradiation with few hours of evolution. He also referred post-prandial abdominal pain and food intolerance with vomiting for approximately 7 days. Physical examination was unremarkable. The electrocardiogram revealed sinus rhythm and no evidence of acute myocardial ischemia. Analytic results revealed troponin I and myoglobin levels in the normal range. Also, haemogram, renal

and hepatic function and pancreatic enzymes were in the normal range. A computed tomography angiogram (CTA) was performed and revealed a previously unknown voluminous gastric hiatus hernia and a ruptured 25 mm SAP with active bleeding and in close communication with a 104x98mm peri-gastric collection in the left hypochondrium extending into the thorax due to the gastric hernia, a 34mm peri-pancreatic collection and a 35mm pararenal collection. (Figure 1)

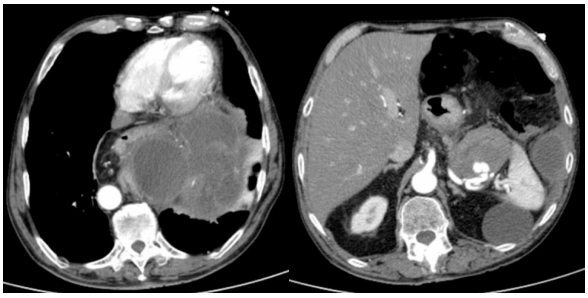

***Figure 1** CTA performed at admission in the ER; CTA – Computed Tomography Angiography; ER – Emergency Department*

An urgent endovascular procedure was planned and the patient was taken to the angiography suite. Under local anaesthesia a left brachial percutaneous access was attained. Selective catheterization of the celiac trunk and splenic artery were performed and subsequently a 4-French guiding sheath (Flexor®Check Flo®) was positioned. Diagnostic angiography identified the pseudoaneurysm origin, (Figure 2) and it was embolized distally with 5x20mm detachable coils (Helix EV3 coils Covidien®). Proximally, both pushable coils (Tornado Embolization Coil Cook® sized 6x20mm and 7x20 mm) and detachable coils (Helix EV3 coils Covidien® sized 7x30mm and 14x30 mm) were used. The end result angiogram revealed an apparently successful embolization of the SAP. (Figure 3)

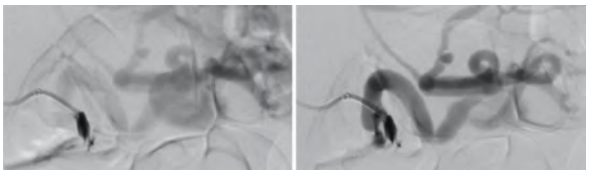

***Figure 2** Diagnostic selective angiography revealing de splenic artery pseudoaneurysm*

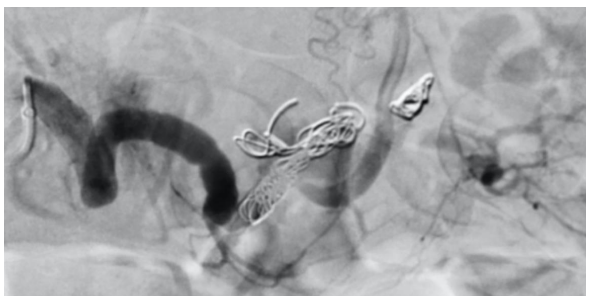

***Figure 3** Selective angiography post-embolization*

Post-procedure the patient did well, with thoracic pain resolution. Analytic work-up was unremarkable, with stable haemoglobin level.
CTA performed 8 days post-intervention revealed complete embolization of the pseudoaneurysm, with no evidence of active bleeding. Peri-aneurysmatic collections remained unchanged in size. Unfortunately, splenic infartion was evident in more than 50% of splenic parenchyma. (Figure 4)

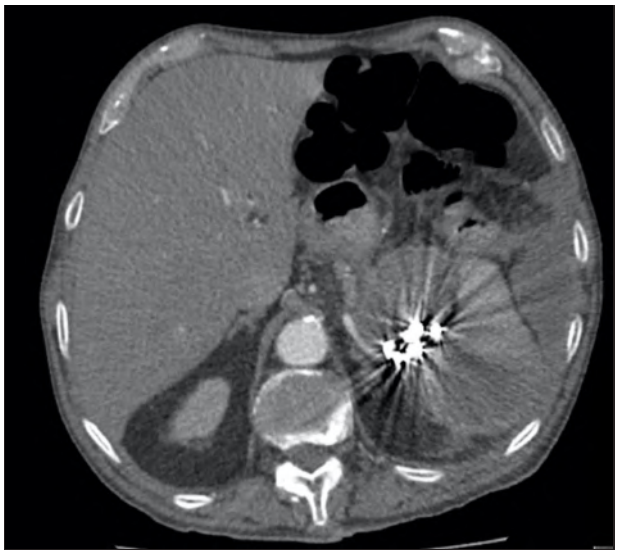

***Figure 4** CTA 8 days after the procedure; CTA – Computed Tomography Angiography*

The patient was discharged 10 days after admission. Follow-up CTA three months post-procedure revealed complete SAP embolization, peri-aneurysmatic collections size reduced and viable spleen. (Figure 5)

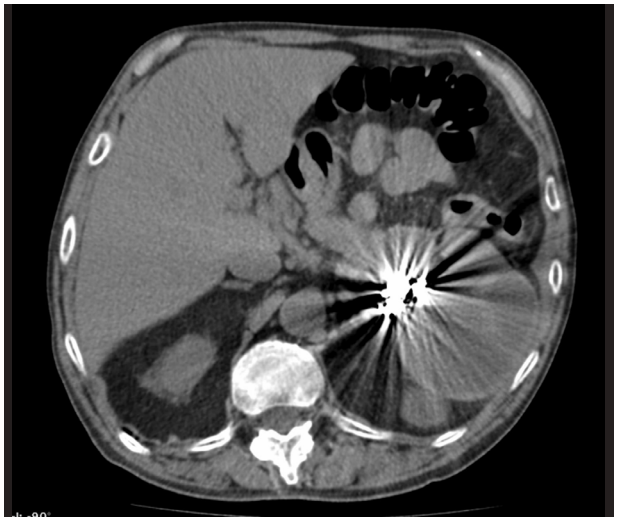

***Figure 5** CTA 3 months after the procedure; CTA Computed Tomography Angiography*

DISCUSSION

Splenic artery aneurysm are classified as true or false (pseudoaneurysm), with most being true aneurysms (72%).[4] *Nevertheless, splenic artery is the most common location for pseudoaneurysms, with pancreatitis and abdominal trauma being the most common aetiologies.*[2] *Idiopathic cases are exceedingly rare, with only two other reported cases in the literature.*[2, 3]

Presentation can range from incidental finding to acute hemodynamic collapse [5] *It is noteworthy that in 22% of aneurysm rupture cases, life-threatening bleeding is the first manifestation.*[6]

Intervention is recommended for all SAP regardless of size. Endovascular management is now an established alternative, recommended for management of unruptured cases, including pseudoaneurysms, not involving the splenic hilum, through transcatheter embolisation or less commonly with stent graft deployment, with splenic function preservation.[7, 8] *A large case series in 2015 reports a 93% success rate for all visceral artery aneurysms treated with interventional techniques.*[9]

For ruptured SAA or pseudocyst involvement, open surgery (aneurismectomy with or without splenectomy) is generally recommended. However, experienced centres reported success with endovascular approach even in haemodynamically unstable patients or as a bridge to surgery.[7]

In fact, complementary use of embolisation preceding surgery in large SAP decreases the perioperative mortality from over fifty to a few percent.[6]

In this specific case, transcatheter SAP embolization was considered due to voluminous intra-abdominal/intrathoracic collections which would increase open surgery technical difficulty. It was initially admitted that endovascular surgery could be a bridge to open surgery with aneurysmectomy and splenectomy, but given the patient´s good clinical recovery no further surgery was considered.

Regarding the endovascular procedure, percutaneous brachial access was preferred over femoral access in order to ease selective catheterization of the celiac trunk and splenic artery. There are several endovascular options for SAP treatment, including coil embolization, detachable balloon occlusion and stentgraft exclusion. Regarding the latter, there are few reported cases in the literature and can be technically challenging due to splenic artery tortuosity, being more suitable for proximally located aneurysms. It has the potential to preserve splenic blood flow and splenic function.

The largest series on stent graft treatment of splenic artery aneurysm included a total of 10 patients. The single anatomic criteria for selection for stentgraft exclusion was proximal and distal splenic artery 15 mm landing zone. A coaxial system with multiple sheaths was used to overcome excessive tortuosity, achieving an 80% technical success with no post-procedure growth, endoleak, kinking, migration or re-intervention.[10]

On the other hand, coil-embolization includes 2 main embolization techniques: "sandwich technique" which requires deployment of coils on both side of the aneurysm and coil embolization limited to the aneurysmal sac with maintained patency of the splenic artery.[11]

Larger aneurysms such as the one described in this paper require the "sandwich technique" for effective treatment and embolization should be aggressive as retrograde blood flow from the intrasplenic branch may result in recurrence of the aneurysm after treatment.[12] *In this technique, the presence of collateral arteries from the left gastric artery, gastroepiploic artery and splenic polar branches reduces the risk of subsequent splenic infarction. However, even when splenic infarcts occur most are asymptomatic and well tolerated by the patient.*[12,13]

Coil embolization is usually performed with pushable coils. Detachable coils were initially developped for neurorradiology for more precise delivery as they can be retrieved when they do not fit the lesion. Although a useful feature, detachable coils are substancially more expensive. So it is incumbent to use either detachable or pushable coils in appropriate circumstances. [14]

CONCLUSION

Idiopathic SAP is an exceedingly rare diagnosis. Endovascular surgery seems to be a good option even in rupture, with good short-term results. However, there is little consensus on follow-up and long term results of endovascular treatment are largely unknown.

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