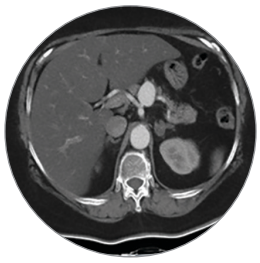

Splenic Artery Aneurysm, Uncommon Cause of Abdominal Pain. A Case Report

Aneurisma de arteria esplénica, causa infrecuente de dolor abdominal. Presentación de un caso

Micaela Arrieta Usta[1]
Édgar Castro Mendoza[2]
María Mónica Yepes Bustamante[3]
Jorge Camilo Escorcia Romero[3]
Jorge Ignacio Arrieta Castaño[3]

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Summary

Visceral artery aneurysms are relatively rare. The splenic artery aneurysm is the most common in this group, occurring in 60 to 70% of patients. We present the case of a 68 year old patient with cardiovascular risk factors, who consulted for acute, intense abdominal pain associated with sensation of weight, and a pulsatile mass at physical examination as representative data. Diagnosis of an saccular aneurysmal dilation in the proximal segment of the splenic artery was made by abdominal angiography and celiac trunk angiography, which, due to its location and to preserve the distal flow, was treated by selective catheterization and embolization of the aneurysm sac, thus reducing risk of rupture and achieving clinical control of the patient's symptoms. The physiopathology, diagnosis, and benefits of endovascular therapy compared to other techniques are briefly explained below.

Resumen

Los aneurismas de las arterias viscerales son relativamente poco frecuentes. El aneurisma de la arteria esplénica es el más común de este grupo, se presenta en el 60 a 70 % de los pacientes. Presentamos el caso de una paciente de 68 años de edad con factores de riesgo cardiovascular, quien consultó por un cuadro de dolor abdominal agudo, intenso, asociado a sensación de peso, y masa pulsátil al examen físico como dato representativo. Mediante angioTAC abdominal y angiografía de tronco celiaco se diagnosticó una dilatación aneurismática sacular en el segmento proximal de la arteria esplénica, la cual, por su localización y con el objetivo de preservar el bazo, fue tratada mediante cateterización selectiva y embolización del saco del aneurisma, para reducir el riesgo de ruptura y lograr un control de síntomas adecuado. A continuación, se explica brevemente la fisiopatología, diagnóstico y los beneficios de la terapia endovascular respecto a otras técnicas.

Introduction

Splenic artery aneurysm is defined as an abnormal dilation of more than 50% of the vessel's diameter, it is the third most frequent abdominal aneurysm after aneurysm of the aorta and iliac arteries (1, 2). It is part of the visceral artery aneurysms, with an incidence of 60% (3). Timely diagnosis is of great importance because of the risk of rupture and potentially fatal bleeding. Often, the diagnosis in the initial phases is incidental, because at this stage it is asymptomatic and, if presented, the symptomatology is very unspecific (4).

Clinical case

P68-year-old female, multiparous, with a history of high blood pressure (HBP), type II diabetes mellitus (DM), hypothyroidism and abdominal aortic aneurysm under active surveillance. He goes to the emergency department for a clinical picture of 3 days of evolution, consisting of abdominal pain in epigastric of 10/10 intensity according to an analogous scale of pain, with sensation of mass and local hypersensitivity. On physical examination on admission, the patient was hemodynamically stable, afebrile, soft abdomen, percussion and adequate peristalsis, hypersensitivity in upper hemiabdomen and, on palpation, pulsatile mass in the epigastrium. Initially a CT angiogram of the abdomen with contrast medium was performed in which saccular dilation of the proximal splenic artery was observed at 1 cm of its source (figure 1).

Also, by means of celiac trunk angiography, a saccular aneurysm formation was evidenced at 10 mm from the origin of 25 × 30 mm with a neck width of 1 mm in the proximal third of the splenic artery.

Considering the surgical risks and the anatomical location of the lesion, endovascular therapy by coils was considered, consisting of: saccular aneurysm channeling and interlook detachable coil release 4 mm × 8 cms, 2d detachable coil: 10 mm × 20 cms, 12 mm × 20 cms, 15 mm × 20 cms. After the procedure, a control angiography was taken, which showed complete exclusion of the aneurysm. There were no immediate complications, so it was decided to discharge it with management of its comorbidities (figure 2).

[1]Radiologist, Neurodynamics. Assistant Professor, Department of Radiology, Universidad de Cartagena. Cartagena, Colombia.

[2]Resident of Radiology, Universidad de Cartagena. Cartagena, Colombia.

[3]Physician. Universidad de Cartagena. Cartagena, Colombia.

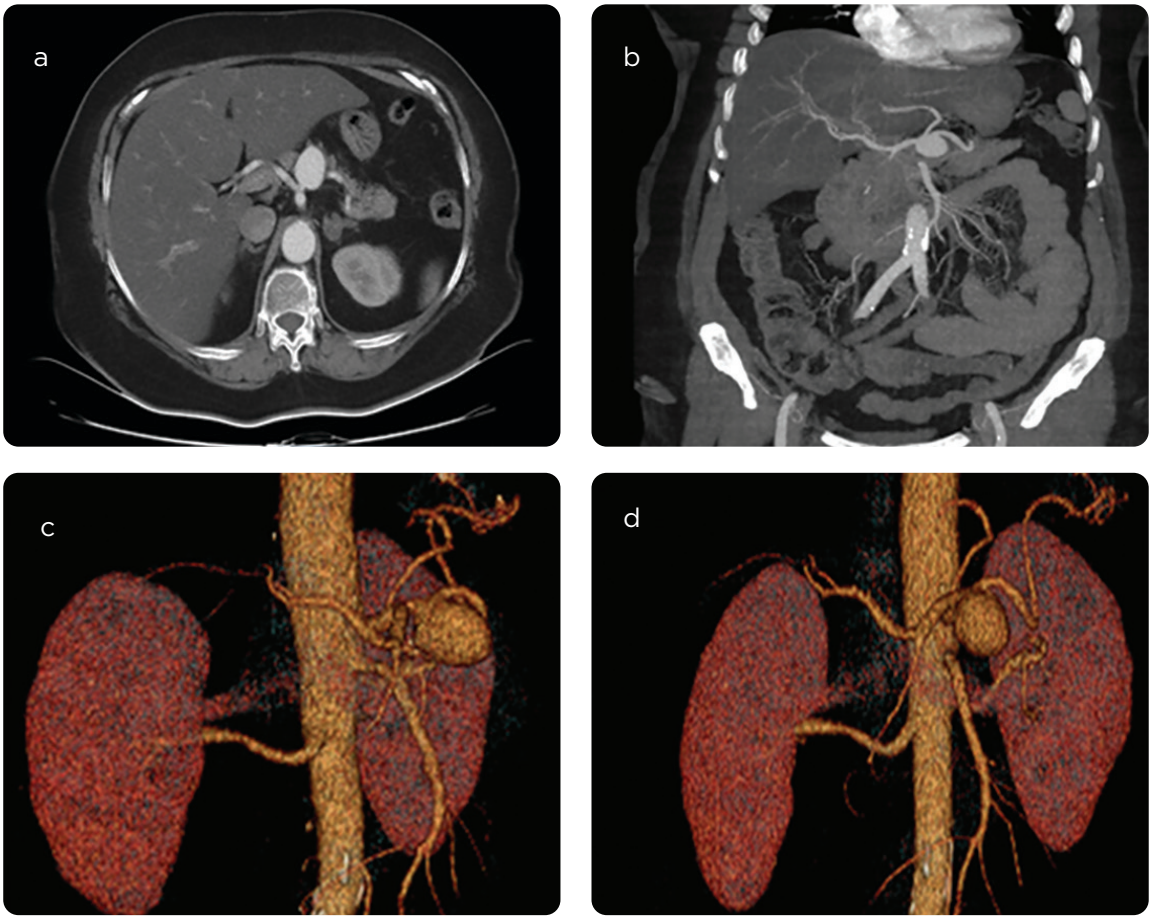

Figure 1. CT angiogram of abdomen. a) Axial section: saccular dilation of splenic artery proximal to 1 cm from its source. b). Coronal section: sacular dilation of 25 × 30 mm, at 10 mm from the origin of the splenic artery, 25 × 30 mm and with a neck of 1 mm in the proximal third of the splenic artery. c and d) Three-dimensional reconstruction.

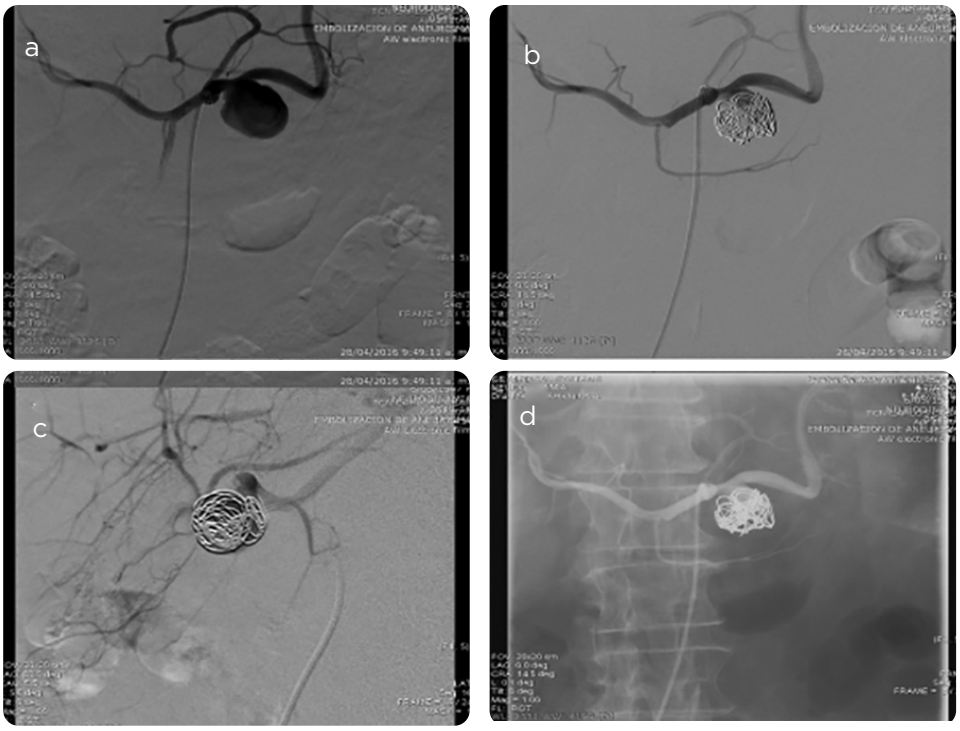

Figure 2. Selective arteriography of the splenic artery with digital subtraction: a) Sacular dilation of the proximal splenic artery is observed at 1 cm from its source. b and c) Post-embolization control with coils, showing adequate occlusion of the aneurysm neck. d) Post-embolization control with aneurysm coils.

Discussion

Aneurysms in the visceral arteries have an incidence of 0.1 to 0.2% and in the splenic artery in 60 to 70% of cases (4). They are more common in women with a 4:1 ratio, but are three times more likely to rupture in men (5). Eighty percent occur in patients over 50 years of age, and are associated in most cases with atherosclerosis (32%) and chronic diseases such as hypertension and diabetes, which are present in the case under discussion. Also included as facilitators are those factors that increase splenic flow, such as arteriovenous fistulas and portal hypertension, with a prevalence of 7 to 20 % (6, 7).

True splenic artery aneurysms are generally solitary, saccular and located mainly in the distal and medial third of the blood vessel (8), most frequently in the region of the splenic bifurcation and hilum and their size varies between 2 and 9 cms (4, 9).

They are asymptomatic in 97% of the patients, so their identification is incidental in imaging studies (10). Rupture is the main complication due to the potentially fatal bleeding that is generated, taking into account that giant aneurysms > 2.5 cms increase the risk of rupture up to 40% (4).

Clinically, they present as a picture of acute abdomen, associated with hematochezia or melena in 26.2% and hematemesis up to 14.8%. Mortality varies between 10 and 25% in non-pregnant patients, and in pregnant women it can reach 70% (3).

Diagnostic images play an important role. Ultrasound is commonly used in the detection of abdominal aortic aneurysms with low frequency transducers (e.g., 4 MHz) performing Doppler and grayscale analysis, which allows estimating vascular size and internal flow rates (11). This technique allows detecting splenic artery aneurysms with the same precision as seen in aortic aneurysms (12). It is limited by intestinal gas, which can make it impossible to visualize the retroperitoneal and mesenteric vessels (11), but it improves their performance with the previous preparation of the patient.

CT plays a more important role in confirming the diagnosis and further characterization of visceral aneurysms and pseudoaneurysms. Multidetector CT with phase acquisitions can accurately and clearly show the location, shape, extent, aneurysmal wall, main artery, and relationship to adjacent vessels (13).

Arterial phase CT angiographic images are typically obtained 20-30 seconds after the start of peripheral intravenous injection at a rate of 3-4 mL/s. Its use is essential, because it can confirm the diagnosis of a ruptured visceral aneurysm and be used to plan the endovascular procedure (11).

Information includes:

- Determining the therapeutic plan: type of approach (femoral, humeral), tortuosity of the vessels, and the angle of the visceral arteries to the aorta.
- Number of afferent and efferent branches
- Volume rendering (VR) and maximum intensity projection (MIP) reconstructions are useful to obtain an optimal analysis of the aneurysm.

As it is a rare pathology and in the absence of controlled studies, treatment is based on available observational studies, therefore, the indications for treatment in symptomatic patients will always be repair regardless of other characteristics (3). Among the indications for intervention in asymptomatic patients are: size greater than 2 cms, documented growth of aneurysm, cirrhotic patients, those with liver transplants, those undergoing major abdominal surgery, and pregnant women during the first and second trimesters of pregnancy (14).

Treatment options for splenic artery aneurysms include surgical repair and endovascular management. Surgical repair or aneurysm resection with possible splenectomy is a second-line treatment option in most cases, although it is often rejected because of the increased long-term risk of bacterial infection. The endovascular treatment of choice is embolization with a liquid and/or spiral embolizing agent —generally reserved for saccular aneurysms and those with adequate flow or alternative to the spleen (13, 15, 16). For fusiform aneurysms, in which arterial lumen requires preservation to avoid damage to the distal organ (spleen), a stent is placed if the arterial anatomy is favorable (16-19).

In most studies, open surgical repair and reconstruction remains the optimal strategy in hemodynamically unstable, polytraumatized, or extrahepatic portal vein-obstructed patients (20). In cases of aneurysm rupture, or aneurysms involving the splenic hilum, commonly undergo splenectomy (3, 10, 21).

At present, the endovascular route takes a leading role in the management of this pathology due to its high success rates and low morbimortality, with good results in non-urgent surgery patients and risky surgical candidates who present associated comorbidities or in patients with hostile abdomen due to pancreatitis, sepsis or previous surgeries. The main advantages of this technique are the low rate of complications, decreased postoperative pain, reduced hospital stay, faster return to daily activities and better quality of life in the short term (2, 14, 22).

Most endovascular procedures (80-90 %) are technically successful, with only a small degree of splenic infarction. Collateral flow, especially through the short gastric arteries, classically maintains the perfusion of the terminal organ. However, the risks of splenic infarction increase with more distal embolizations (11).

An imaging follow-up at 1-year intervals has been proposed because of a 20% risk of reperfusion after a successful embolization. If reperfusion occurs, the sac is again exposed to systemic pressures and may once again be at risk of rupture (16).

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Conclusion

Splenic artery aneurysms in the proximal third are rare. Their diagnosis is usually incidental in imaging studies with contrast medium, since they are usually asymptomatic. The surgical approach increases the risk of complications, so endovascular management is a safe and effective technique for treatment, with low rates of complications and recurrence.

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Correspondence

Micaela Arrieta Usta
Universidad de Cartagena
Centro Carrera 6 # 36-100, Claustro San Agustín
Cartagena, Colombia
micaelarrieta@gmail.com

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