

## Embolization of splenic artery aneurysm associated with gastrointestinal bleeding: case report

### *Embolização de aneurisma de artéria esplênica associado à hemorragia digestiva: relato de caso*

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#### Abstract

The splenic artery is the visceral vessel that is most often affected by aneurysmal disease. Occasionally, gastrointestinal bleeding may signify that the aneurysm is in communication with the digestive tract. We report on the case of a 64-year-old multiparous patient with intermittent digestive bleeding caused by a splenic artery aneurysm who was successfully treated with endovascular embolization.

**Keywords:** Splenic artery; aneurysm; hemorrhage gastrointestinal; embolization therapeutic.

#### Resumo

A artéria esplênica é o vaso visceral mais acometido pela doença aneurismática. Ocasionalmente, um sangramento gastrointestinal pode refletir uma comunicação entre o aneurisma de artéria esplênica e o trato digestivo. Relatamos o caso de uma paciente de 64 anos com hemorragia digestiva intermitente devida a aneurisma de artéria esplênica, a qual foi submetida ao tratamento endovascular por embolização com sucesso.

**Palavras-chave:** Artéria esplênica; aneurisma; hemorragia gastrointestinal; embolização terapêutica.

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## ■ INTRODUCTION

An aneurysm of the splenic artery was described for the first time in 1770 by Beaussier and the first successful treatment was presented by McLeod in 1940. This type of aneurysm is considered the most common in the splenic territory, accounting for 46 to 60% of patients with visceral aneurysms. They are asymptomatic in the majority of patients and splenic artery aneurysms tend to be diagnosed as an incidental finding when investigating some other abdominal disease using imaging.<sup>1</sup>

Despite being the third most common type of abdominal artery aneurysm and the most common type of visceral artery aneurysm, splenic artery aneurysms are considered relatively rare.<sup>2-4</sup> A review of routine autopsies of the general population found a very low incidence of splenic artery aneurysm (0.01%), rising to 1% in the hypertense population and 10.4% in the elderly population.<sup>3,4</sup> The majority of cases are described in women, at a proportion of 4:1, with a predilection for multiparous women.<sup>5</sup>

Rupture into the peritoneal cavity takes place in 3 to 9.6% of patients and it is the most feared complication because of the potential for fatalities.<sup>3,6,7</sup> Occasionally, intermittent gastrointestinal bleeding may signify that the aneurysm has ruptured into the digestive tract.<sup>8</sup>

We report on the case of a 64-year-old multiparous patient who presented with a splenic artery aneurysm that had ruptured into the gastrointestinal tract, causing several episodes of digestive bleeding, who was successfully treated endovascularly.

## ■ CASE REPORT

SMTF was a 64-year-old female patient with a gestational history of four previous natural deliveries. She presented with an episode of acute abdominal pain approximately 6 h after admission

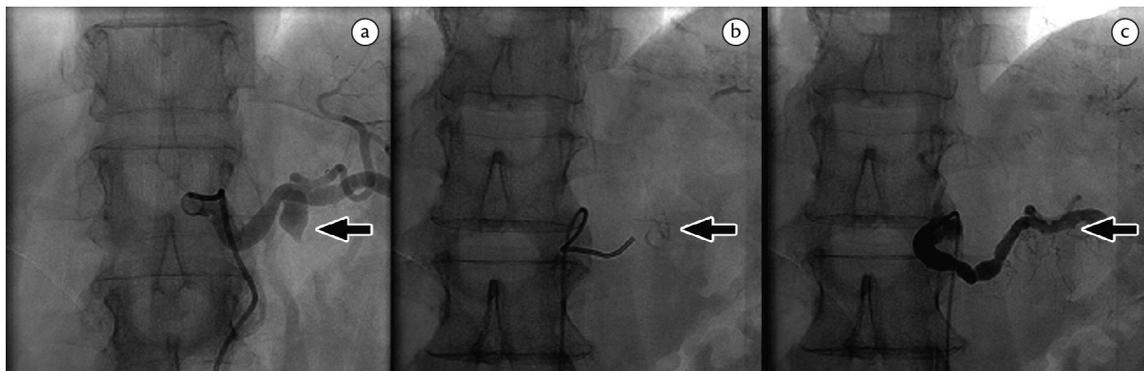
to hospital, followed by hematemesis. SMTF was on antihypertensives and had previously had clinical treatment for peptic ulcer disease.

On physical examination at admission, the patient was extremely pale, conscious and well oriented, with a heart rate of 80 beats per minute, peripheral pulses present and symmetrical and arterial blood pressure of 100 × 60mm Hg. Her abdomen was flat and flaccid, but was painful both spontaneously and on palpation although there was no abdominal guarding or pain on abrupt decompression.

The following tests and examinations were conducted: hematocrit (29%); hemoglobin (8.4 mg/dL); coagulogram (no abnormalities); and an upper digestive endoscopy revealing a gastric antral lesion suggestive of a peptic ulcer and active bleeding. Sclerotherapy was attempted during the endoscopy, without success. The patient was stabilized with blood and crystalloids and then sent to the surgery block for explorative laparotomy, during which an actively bleeding ulcerated gastric lesion was found in the antral region and then debrided and sutured.

The patient was monitored postoperatively in the ICU, but 3 days after surgery she once more presented a digestive hemorrhage and upper digestive endoscopy showed fresh bleeding in the antral region. An arteriography was therefore conducted to diagnose the cause of bleeding and, if possible, treat it. After locoregional anesthesia of the right crural-inguinal region, femoral access was used to introduce a Berenstein 4 French catheter into the splenic artery. A saccular aneurysm was found in the mid-distal segment of the splenic artery, with no active bleeding. The aneurysmal lesion was embolized using coils and the aneurysm was excluded by the end of the procedure (Figure 1).

The patient progressed satisfactorily during the postoperative period, with hemodynamic



**Figure 1.** **a)** Saccular splenic artery aneurysm at the mid-distal transition (seta). **b)** coils inside the aneurysm indicated by arrow. **c)** aneurysm excluded after embolization.

stabilization and no further episodes of digestive hemorrhage. She was discharged in good clinical condition 3 days after embolization.

Eighteen months after the procedure, the patient was still free from further episodes of abdominal pains or digestive bleeding.

## DISCUSSION

Splenic artery aneurysms are the most common aneurysms of the abdominal viscera.<sup>1</sup> A majority of these aneurysms occur in multiparous women (4:1) with a mean age of 55. The incidence of rupture ranges from 3 to 10% and risk is higher during physical effort, including labor, leading to major bleeding and fatality rates of 10 to 25.<sup>9</sup> Mortality among pregnant women can reach 70% and among portal hypertension patients it can reach 90%.<sup>10</sup>

The pathogenesis of splenic artery aneurysms is related to vessel wall fragility and increased blood pressure and/or flow through the vessel. Many different conditions are related to the emergence of splenic artery aneurysms, including atherosclerosis, portal hypertension, multiparity, intra-abdominal inflammatory processes, abdominal traumas, connective tissue diseases, congenital aneurysms and mycotic emboli.<sup>5-7</sup> The majority of these aneurysms are located in the distal third of the artery and they may be found in conjunction with other aneurysms of the same artery or other vessels.<sup>4</sup>

Diagnosis can be confirmed by Doppler ultrasound. This examination can detect the aneurysmal mass and any adhesion to adjacent organs, in addition to detecting other concomitant diseases. Arteriography is generally necessary because it can show aneurysmal vascularization, detect vascular anomalies, provide etiologic diagnosis (as in muscle dysplasias) and can also delineate other visceral aneurysms, in addition to offering the possibility of endovascular treatment.<sup>6,10</sup>

The majority of aneurysms are saccular and of small size. Generally they are asymptomatic, but they may cause symptoms of abdominal pains at the hypochondrium and the left flank, or epigastrium, radiating toward the scapular region. If rupture occurs, blood may leak into the peritoneal and retroperitoneal cavities, the intestinal tract or the splenic vein (creating a fistula). In such cases, symptomatology becomes significant, with peritoneal irritation, digestive bleeding and shock.<sup>11</sup>

Even though vascular anomalies are an atypical etiology of hematemesis, they should always be suspected in cases of recurrent hematemesis and a differential diagnosis should be arrived at as quickly

as possible. Treatment in emergency cases can be by open surgery or using endovascular techniques.<sup>9</sup>

If open surgery is used, aneurysmectomy with proximal and distal ligation can be performed, with or without reconstruction of the artery after removal of the aneurysm. In some cases splenectomy, pancreatectomy or both may be necessary. Indications are splenic devascularization, caused by ligation of the artery, or aneurysmal adhesion to the pancreas. The alternative is to employ endovascular embolization, which offers the advantage of low invasivity and is of great help when patients exhibit high surgical risk. Nevertheless, one should be conscious of the possibility of complications, such as coil migration, occlusion of the incorrect branch, splenic infraction and infection,<sup>12</sup> in addition to the need for an agile and experienced surgical team and the necessary materials always at hand, particularly for emergency situations.

We have described the case of a 64-year-old patient with a splenic artery aneurysm that had ruptured into the gastrointestinal tract and was successfully treated endovascularly.

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