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Spontaneous Rupture of Splenic Artery Aneurysms: Case Report and Review of the Literature

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Abstract: The splenic artery aneurysms are rare and represent the third site of intra-abdominal aneurysms and the first location of visceral arteries. We report a case of spontaneous rupture of splenic artery aneurysm supported in the "E" department of visceral surgical emergencies, supplemented by a review of the literature. Splenic artery aneurysms differ from other aneurysms by a varied etiology and little evocative symptomatology. The majority of splenic artery aneurysms are asymptomatic. However, splenic artery aneurysms may manifest as epigastric or as the upper part of the left hypochondrium pain. Nowadays, a lot of splenic artery aneurysms were diagnosed and surgically treated with success, thanks to different diagnostic methods such as ultrasound, CT and angiography, which remains the golden standard. Action to be taken will depend on the location, diameter, reports of the aneurysm with adjacent organs, type of elective surgery or emergency and whether the aneurysm location is single or multiple. Rupture is the major evolutionary accident of splenic artery aneurysms, it can take several clinical forms that can be grouped according to their topography (intraperitoneal rupture, in a hollow viscus and in a full organ). The splenic artery aneurysms can be treated by embolization; however, several complications may be a result of treatment by embolization.
Keywords: Spontaneous rupture, Aneurysm, Splenic Artery, Embolization, Arteriography.

INTRODUCTION

Splenic artery aneurysms occupy the third place of abdominal aneurysms after those of the aorta and iliac arteries, and account for two-thirds of splanchnic aneurysms.

They are distinguished from other aneurysms by a varied etiopathogeny and symptoms that are not very suggestive. This pathology must be evoked ahead a pain of the left hypochondrium, and even more if one feels a beating mass in this region.

The evolution of enraptured aneurysms requires a discussion of therapeutic indications and monitoring of the patient. The decision depends on the nature of the aneurysm, its location, its diameter and the patient's terrain.

We report a case of spontaneous rupture of a splenic artery aneurysm revealed by a state of hemorrhagic shock in a 34-year-old patient, Hospitalized in the Emergency Department of the IBN SINA University Hospital of Rabat. In addition, we will review the main features clinical, radiographic, and pathological aspects of this disease.

CASE REPORT

34-year-old man, with no medical history, admitted to the emergency department for management of a hemoperitoneum.

The symptomatology dates back to a week by the appearance of epigastric abdominal pain, resistant to the usual analgesics, gradually spreading throughout the abdomen, accompanied by two episodes of vomiting, without transit disorder. No notion of trauma is found.

An abdominal ultrasound performed, was in favor of intra-peritoneal effusion. A subsequent abdominopelvic CT shows an aneurysm of the splenic artery surrounded by a hematoma and a larger pelvic effusion.

Shortly after his arrival, the patient had an intense pallor, arterial hypotension at 70/50 mm Hg, and tachycardia at 150 bpm.

With this hemodynamic instability, evoking an aggravation of his condition, he benefited from a vascular filling and a transfusion of two red blood cells.

These measurements improved the hemodynamic state of the patient and allowed him to be taken immediately to the operating room.

Median laparotomy showed a large hemoperitoneum of 3000 ml and 900 g of hematoma collected in the lesser omental sac. The exploration of the peritoneal cavity revealed active bleeding from of a ruptured aneurysm of the splenic artery. Hemostasis was obtained after splenectomy with aneurysmal dilatation and ligation of the splenic artery (Figure No. 3a, 3b), Preoperative hemodynamics was maintained at the cost transfusion of three red blood cells and two fresh frozen plasma.

The immediate postoperative evolution was favorable, with hemodynamic stabilization. The patient had left the hospital after five days of hospitalization.

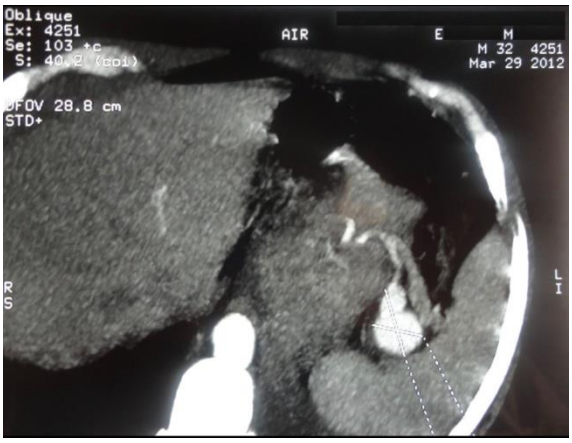

Fig-1: Abdominal-pelvic CT with contrast injection showing a saccular lesion opposite the splenic pedicle, measuring 35mm × 26mm compatible with a splenic artery aneurysm.

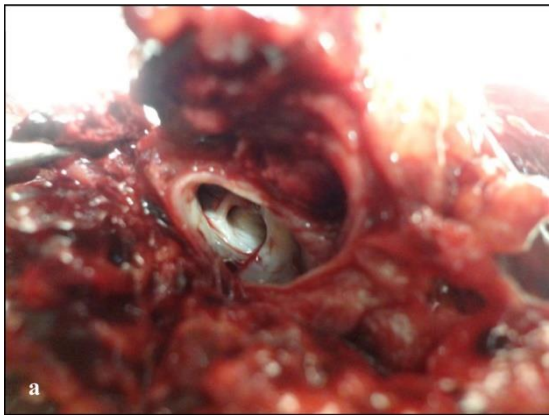

Fig-2: Intraoperative view after exclusion of the aneurysm and splenic artery ligation + splenectomy

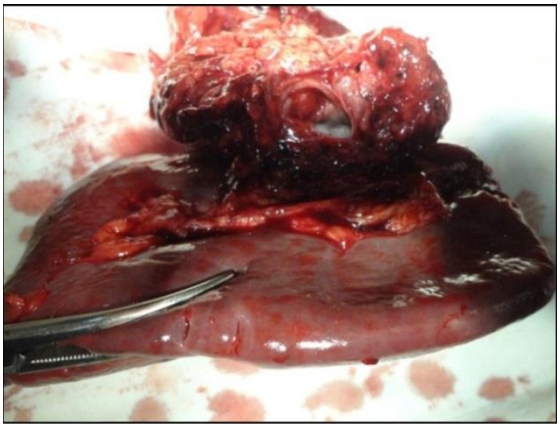

Fig-3: Operative part of a splenectomy with aneurysmal dilation

DISCUSSION

This clinical case highlights a rare but particularly serious entity [1]. Although the indication for surgical intervention is obvious, control of bleeding is sometimes difficult, especially in cases of cardiac arrest or coagulopathy. Once the diagnosis of ruptured aneurysm of the abdominal aorta is excluded, and if bleeding persists, it is necessary to consider ruptured splenic artery aneurysm or other visceral aneurysms. Data from the literature concerning the management of ruptured artery aneurysms are poor. Thus there are no recommendations or guidlines, the reported observations are limited to isolated cases or small studies [1].

In our case, distal ruptured SAA was located in the splenic hile, requiring urgent laparotomy with splenectomy. The diagnosis of SAA was often made during an acute rupture. Nowadays, with the democratization of medical technologies and the wide use of CT, these aneurysms are revealed at asymptomatic stages [2].

A surgical or endovascular management should be considered for symptomatic aneurysms, for aneurysms ≥ 2 cm in size, or for any SAA in female patients who are pregnant or in childbearing age [3]. the conservative attitude, such as beta-blocking treatment, should be reserved for selected patients, some studies show that late mortality is high [4]. Many techniques are described in the literature: endovascular embolization, open surgery, laparoscopy.

However, there is no consensus that defines the choice of therapeutic strategy [5,6]. A systematic review showed that endovascular repair of SAA has better short-term outcomes compared to open approaches, including significantly lower perioperative mortality[4].

Aneurysmectomy and reconstruction with resection anastomosis end to end is an option for proximal SAA, while distal SAA requires aneurysmectomy with splenectomy, and sometimes even distal pancreatectomy if the aneurysm is too closely adherent to the tail of pancreas [4,7].

Splenectomy should be avoided as possible to prevent post-splenectomy complications: (a) thrombocytosis (b) immunodeficiency [4].

The pathophysiology of SAA is not well known. A combination of medial hyperplasia and fragmentation of the elastic lamina, particularly in patients with portal hypertension, has been reported [1,8,9].

Other possible mechanisms are fibromuscular dysplasia, polyarteritis nodosa, α-1 antitrypsin deficiency, systemic hypertension and infective factors [1,3,10,11]. The theory incriminating the hormonal contribution, in the female predominance of SAA is suggested [10].

Despite the fact that many SAAs show calcification and other characteristics of atheromatous disease, these signs remain secondary to arterial degeneration and do not allow atherosclerosis to be considered as the main underlying etiology.

CONCLUSION

A spontaneous SAA rupture is a diagnosis to be evoked in patients with abdominal pain and hemodynamic shock. An exploratory laparotomy should be performed, with aneurysmal resection and splenectomy depending on the location of SAA. Endovascular surgery can be an elegant and effective alternative in some cases. The mortality of rupture of SAA is high and the precise etiology remains uncertain.

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