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Aortic pseudoaneurysm after endarterectomy for small aorta syndrome

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ABSTRACT

INTRODUCTION: Small Aorta Syndrome (SAS) or hypoplastic aorto-iliac syndrome is a rare pathology of the aorta that affects almost exclusively young or middle-aged women and is characterized by smaller dimension of the aorta and iliac axes. Etiopathogenesis is unclear and many factors have been invoked. The smaller caliber of the aorta and iliac arteries may predispose to aorto-iliac occlusive disease development.

In the past aorto-iliac endarterectomy (AE) with patch closure was utilized as an alternative to surgical bypass in order to correct steno-obstructive syndromes affecting carriers of SAS. Little is known about long term outcomes of this type of surgery.

PRESENTATION OF THE CASE: During investigations for acute colecystitis, an aortic pseudoaneurysm (PA) was diagnosed by ultrasound in a 73 old year woman. She was submitted twenty-two years ago for SAS with disabling claudication to aortic endarterectomy (AE) with patch graft insertion. Considering all the vascular options available she was submitted to open surgery with replacement of the aortic bifurcation.

DISCUSSION: Aortic PA is a relatively common complication after bypass surgery but is rarely observed after AE. It requires prompt intervention to prevent subsequent complications such as rupture, thrombosis, distal embolism or aorto-enteric fistula.

CONCLUSION: Endovascular treatment for aortic PA should be always considered the treatment of choice but the open surgical option was preferred in this particular case because of the small diameters of the iliac accesses, making them unsuitable for an endovascular approach.

1. Introduction

The present work has been reported in line with the SCARE criteria [1].

Small Aorta Syndrome (SAS), also called hypoplastic aorto-iliac syndrome, is a congenital anatomical entity characterized by a smaller caliber of the aorta and iliac arteries. It may predispose to aorto-iliac occlusive pathology that can be corrected with open or endovascular surgery [2–4]. Aortic endarterectomy (AE) was a widely adopted surgical option for treatment of SAS in last decades. Adjunctive patch angioplasty was frequently performed to repair the arteriotomy and to enlarge the aortic lumen. A possible complication of AE is the development of a pseudoaneurysm (PA) in the patch site. We present a case of post AE aortic PA in a woman with a history of SAS, discussing pathogenesis, diagnosis and treatment options of this unusual complication.

2. Case report

A 73-year-old woman, with a history of essential arterial hypertension, underwent AE for treatment of SAS when she presented with disabling claudication 22 years prior. The aortotomy was closed with a Dacron patch graft using a 4-0 monofilament polypropilene suture. At discharge all peripheral tibial pulses were present. The patient, who lived in a rural area, was lost to follow-up.

As part of a work-up for cholecystitis, she underwent an ultrasound scan (US) of the abdomen which revealed a pulsating mass, extending from the level of the aortic bifurcation, measuring 43 × 45 mm. The patient was completely asymptomatic and afebrile. Blood tests showed no evidence of leukocytosis as might be expected in the setting of infected PA. The aorto-iliac digital subtraction angiography confirmed the presence of an aortic PA of the aortic bifurcation, with very narrow iliac arteries (Fig. 1).

Computed tomographic angiography of the abdomen demonstrated a 37 mm length aortic neck, 43 mm antero-posterior aortic diameter and 40 mm antero-lateral diameter, 5.5 mm bilateral common iliac and 5.0 mm bilateral external iliac diameters. Angio-CT scan failed to show any evidence of aortic inflammation or other

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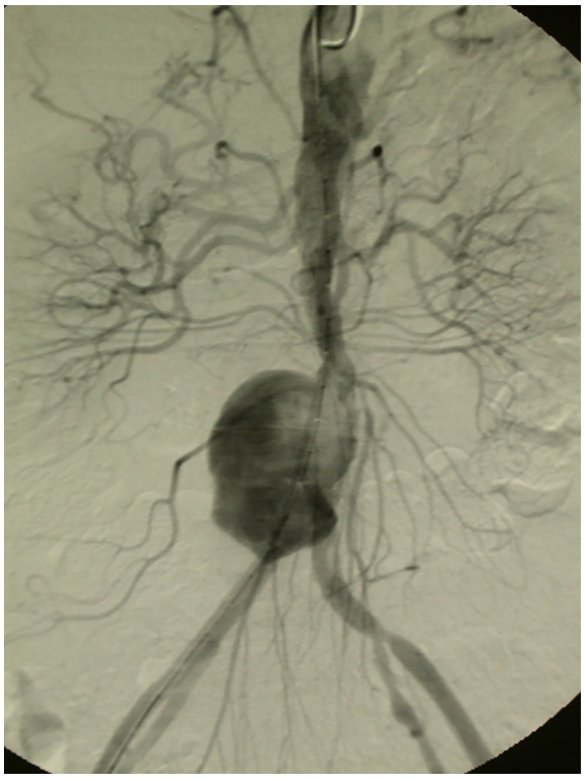

Fig. 1. Preoperative aortography of the aortic pseudoaneurysm (PA) after aortic endarterectomy (AE).

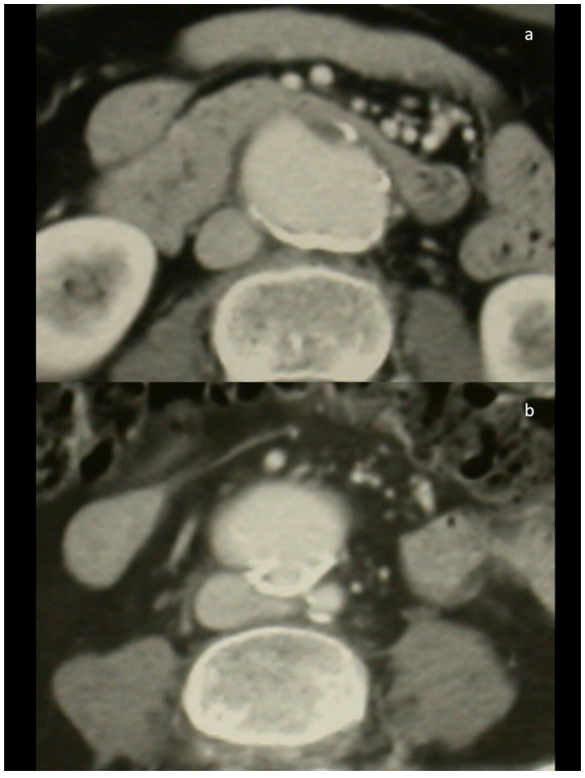

Fig. 2. a–b; CT scan of the aortic PA.

signs of periaortic infection (absence of gas bubbles, fat stranding, phlegmon or abscess) (Fig. 2a and b).

Open surgical correction was performed under general anesthesia through a mid-line abdominal incision; the aortic PA was isolated (Fig. 3a) and, after 2500 I.U. of heparin with aortic cross clamping, then resected. The PA specimen showed a 5 cm in length dehiscence of the suture line (Fig. 3b). A 14 × 7 mm diameter aorto-biiliac Dacron knitted, double velour Gelatine-coated vascular graft (Uni-Graft® K DV, B. Braun Melsungen AG, Tuttlingen, Germany) was interposed (Fig. 3c). No purulent material was observed near or in contact with the aorta. Bacterial cultures of the specimen resulted negative for growth.

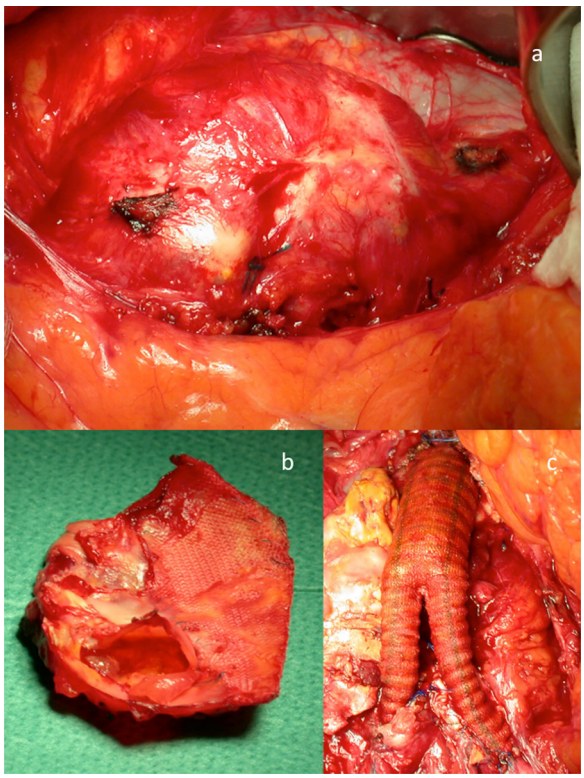

Fig. 3. a. Intraoperative image of the PA; b. Specimen of the aortic wall and Dacron patch showing the dehiscence of the suture line; c. Aortobiiliac bypass graft to correct the aortic PA.

The patient had an unremarkable postoperative course and was discharged eight days later. On three years follow-up, the patient remained asymptomatic and had no evidence of recurrent anastomotic dilatation or pseudoaneurysm on ultrasound imaging.

3. Discussion

SAS was originally described in 1847 by Quain [5] and later, in 1969, by Johnson who named it “Small Blood Vessel Syndrome” [6]. This particular clinical picture is actually also known as “Hypoplastic Aortoiliac Syndrome” [7]. Some authors prefer the more descriptive term of “premature aorto-iliac steno-occlusion in women” [3].

This rare arterial pathology is characterized by a tapered terminal aorta with narrow iliac arteries, affecting young or middle-age women with mild obesity and aggressive atherosclerosis. Absence of predisposing risk factors such as smoking or hyperlipidemia is frequently observed. Etiopathogenesis is unclear and many factors have been invoked. Arnot et al. observed in cadavers the presence of a unique origin for the lowest pair of lumbar arteries and hypothesized that a congenital defect, due to overfusion of the two embryonic dorsal aortas, could cause hypoplasia of the terminal aorta [8]. High level of antiphospholipid antibodies, local inflammation, radiation, infection, aortic haemodynamics or aggressive atherosclerosis have been also considered, but the most accred-