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CLINICAL CASE

A case of a 15-year evolution of a coral reef aortic lesion.

Évolution d'une lésion aortique coralliforme sur 15 ans

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Summary

We are reporting here the 15-year history of a patient affected by a chronic and evolutive coral reef aorta successfully treated by repeated revascularization.

Key words: Coral reef aorta, thoracic and thoracoabdominal aorta, evolutive lesion, open repeated revascularization

Résumé

Prise en charge sur 15 ans d'une patiente atteinte par une lésion aortique coralliforme évolutive traitée avec succès par des revascularisations chirurgicales répétées.

Mots clés : Lésion coralliforme de l'aorte, aorte thoracique et thoraco-abdominale, lésion évolutive, revascularisations chirurgicales répétées

INTRODUCTION

Endoaortic proliferation so-called coral reef aorta was reported by Qvarfordt in 1984 as a rare form of atherosclerosis (1). Usually, it lies on the posterior side of the lower thoracic or thoraco-abdominal aorta. Coral reef can occlude the aortic lumen and the visceral ostia at the origin of both acute aortic thrombosis and visceral ischemia. In a series including 70 patients, Grotemeyer et al. reported renovascular arterial hypertension as the most frequent clinical manifestation, followed by intermittent claudication and chronic visceral ischemia (2). Several isolated cases in literature report different surgical technics in order to deal with this very complex occlusive disease, including endovascular approaches for some authors (3). Transaortic endarterectomy by a left-sided thoraco-lombotomy approach remains the gold standard.

Patients affected by coral reef aorta are two decades younger than patients suffering from other arterial occlusive diseases (2). Coral reef aorta is a chronic evolutive disease. Re-operations increase the complexity of therapeutic strategy by endovascular or direct approaches.

We are reporting here the 15-year history of a patient affected by a chronic and evolutive coral reef aorta successfully treated by repeated revascularization.

CASE REPORT

A 48-year-old woman was admitted for a bilateral rest pain of the lower limb. Previous medical history included active tobacco abuse, untreated hypertension and hyperuricemia. Doppler ultrasound examination demonstrated heavily calcified and stenosed juxtarenal aorta with bilateral renal arteries stenosis. Renal function and serum ions (calcium, phosphate, magnesium) involved in the calcium metabolism regulation remained normal. CT-scan confirmed the aortic lesion extending from the coeliac trunk to the inferior mesenteric artery and celiac trunk obliteration; both kidneys had two renal arteries. The upper thoracic and thoraco-abdominal aorta was normal. A transaortic endarterectomy of the aorta was performed through a left-sided thoraco-lombotomy in the tenth intercostal space. Postoperative course was uneventful with normal bowel and renal function. Blood pressure was controlled with only one anti-hypertensive drug. Walking became unlimited. She reduced smoking to 5 cigarettes / day.

Three years later, she presented bilateral rest pain. CT-scan showed a severe calcified stenosis of the thoracic aorta extending from D10 to D12 up to the level of the later

intervention. Selective spinal cord CT-scan angiography identified T7 and T10 intercostal arteries critical for spinal cord vascularization. Considering the risk of spinal cord ischemia, we performed a bypass between the ascending thoracic aorta and the infra-renal abdominal aorta via a median sterno-laparotomy rather than a direct aortic endarterectomy. The post operative course was uncomplicated. CT-scan showed a correct surgical result.

One year later, she came back with severe bilateral lower limb claudication, related to an aortic calcified obliteration lower to the distal anastomosis of the previous bypass and extended to the common iliac arteries. She underwent a bifurcated graft bypass from the previous prosthesis to the external iliac arteries via a midline laparotomy (figure 1). The postoperative course was uneventful.

One year later, the patient described daily sudden and transient paralysis of lower limbs. A new CT-scan showed the descending thoracic aorta totally occluded, down to the celiac trunk (figure 2). Despite the spinal cord MRI being normal, the neurologists suspected spinal cord ischemia. Neurologic symptoms regressed 6 months later.

One year later, new symptoms appeared. They were related to endoluminal calcification progression leading to a severe stenosis of the thoraco-abdominal aorta (figure 3). The patient suffered from significant headaches due to renovascular hypertension and mesenteric ischemia manifestations. Doppler ultrasound confirmed renal and superior mesenteric arteries stenosis. We performed through a left thoraco-transversal laparotomy a visceral and kidney revascularization by several bypasses from the previous graft connected to ascending aorta. In all, she had two Dacron graft bypasses to the superior mesenteric artery and superior left renal artery and three saphenous vein graft bypasses to the inferior left kidney artery and both superior and inferior right

kidney arteries (figure 4). Postoperative courses were simple with symptoms in regression.

Fifteen years after the first surgical operation, the patient is doing well with active daily activities and regular work. She hasn't stopped smoking. Her blood pressure is controlled with one anti-hypertensive drug. Kidney function is normal. CT-scan shows the permeability of various bypasses and totally occluded native aorta from left subclavian artery to common iliac arteries.

DISCUSSION

The frequency of coral reef aorta is estimated at around 0.6 %. For Grotemeyer et al the development of coral reef could be linked to a dysregulation of the calcium metabolism like observed during terminal renal insufficiency. For these authors, some protein-like fetuin-A could be involved in arterial calcification proliferation (2). More recently, Schlieper et al studied ten patients affected by coral reef aorta, submitted to sera and histological evaluation (4). Their conclusion was the same as ours.

Few experiences of endovascular treatment of coral reef aorta are available in the literature (3,5). Some difficulties are pointed out: the lack of self-expanding capacity limiting stent graft placement, the possible detachment of atherosclerotic debris during the stent deployment, the fracture stent graft due to calcified aortic wall. Moreover the frequent location of the lesion at the thoraco abdominal level could increase the risk of spinal cord injury. For us endovascular treatment must be reserved for elderly patients with multiple comorbidities.

Perhaps the most prominent point emphasized in this reported case is the progression of the disease reaching the wall progressively of all the descending and the thoraco


abdominal aorta, and finally inducing the thrombosis of the native aorta. In the literature, most papers are centered on the technical treatment of the aortic lesion at only one time in the history of the disease. We found only one case of progression of the disease causing repeated revascularization from the ascending aorta (6). Interestingly enough, in nearly all the reported cases, the aortic root and the ascendant aorta were spared by the disease, leading us to ask the question of the location mainly in the thoraco-abdominal aorta. Perhaps this type of vascular lesion is not induced by classical cardiovascular risk factors but develops in response to other factors like calcium dysregulation. Some authors hypothesize that aortic cross-clamping lesions of a previous abdominal surgery may be the starting point for a recurrence calcium proliferation on both sides.

In conclusion, this clinical case showed the 15-year history of a patient affected by a chronic and evolutive coral reef aorta.

DISCLOSURE:

The authors declare no conflicts of interest.

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FIGURE LEGEND

Figure 1: CT scan aspect of the intermediate surgical assembly showing the ascending aorta to abdominal aorta and extended to common iliac arteries bypass graft.

Figure 1: Aspect scanographique du pontage entre l'aorte ascendante et l'aorte abdominale étendu par un second pontage bifurqué sur les artères iliaques communes.

Figure 2: CT-scan showing the complete occlusion of the descending thoracic aorta.

Figure 2: Scanner montrant l'occlusion complète de l'aorte thoracique descendante.

Figure 3: CT-scan showing endoluminal calcification progression leading to a severe stenosis of the thoraco-abdominal aorta.

Figure 3: Scanner montrant la progression de la calcification endoluminale aortique menant à une sténose serrée de l'aorte thoraco-abdominale.

Figure 4: CT scan aspect of the final arterial surgical assembly. The native aorta is totally occluded down to the left sub-clavian artery. Showing a main arterial by-pass graft anastomosed to the ascendant aorta in order to make visceral and lower limb revascularization possible.

Figure 4: Aspect scanographique du montage chirurgical final. L'aorte native est totalement occluse à partir de l'artère sous-clavière gauche. L'ensemble des revascularisations viscérales et des membres inférieurs provient du pontage artériel principal anastomosé à l'aorte ascendante.

Figure 1

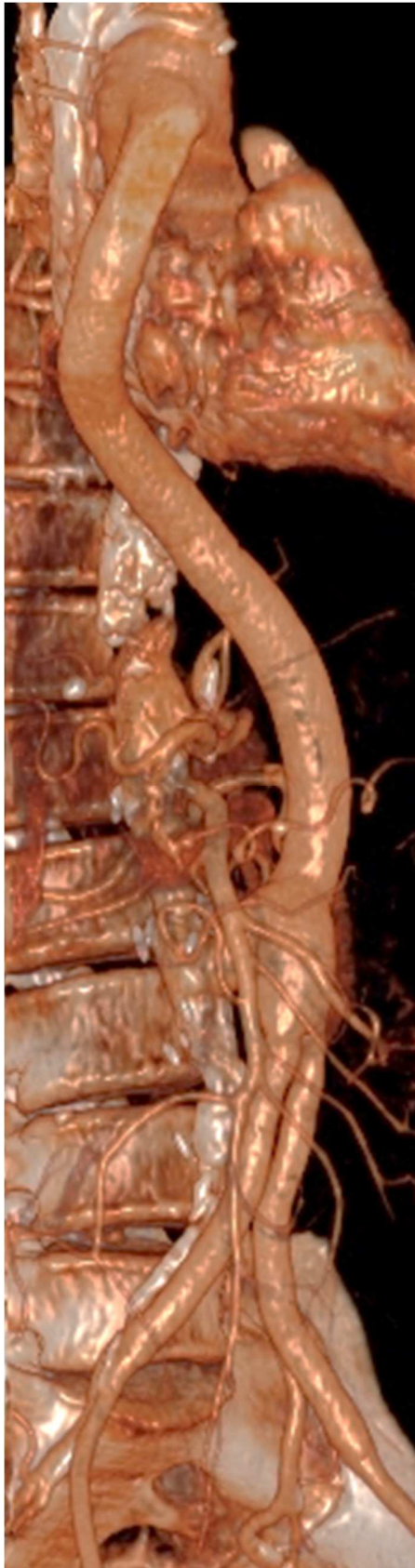


Figure 2



Figure 3



Figure 4

