Discrete Abdominal Aortic Stenosis Presenting With Bilateral Lower Limb Claudication — A Case Report

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Localized discrete abdominal aortic stenosis leading to bilateral lower limbs claudication is uncommon in Asians, especially among women. We report on the case of a 63-year-old woman with localized discrete abdominal aortic stenosis manifested as claudication in her bilateral lower extremities. A magnetic resonance angiography showed a short and asymmetric abdominal aortic stenosis at the third to fourth lumbar level below bilateral renal arteries. She received successful graft interposition and her clinical condition dramatically improved. A surgical specimen from the pathological examination revealed typical atherosclerotic plaque resulting in an asymmetric narrowing of the lumen of aorta. The final diagnosis was discrete abdominal aortic stenosis, not coarctation of the abdominal aorta. Based on the findings of this case, we therefore suggest that the diagnosis of abdominal aortic stenosis should be considered when patients present with intermittent claudication and also that surgical intervention is the treatment of choice.

Key Words: Intermittent claudication • Abdominal aortic stenosis

INTRODUCTION

Localized discrete abdominal aortic stenosis resulting in bilateral lower limb claudication is uncommon in Asians, especially in women.1,2 The differentiation of atherosclerotic aortic stenosis and coarctation of the aorta cannot be done by image studies, but can be confirmed by pathological studies. We report on the case of a 63-year-old woman with localized discrete abdominal aortic stenosis, diagnosed by pathological study. She received a successful graft interposition, resulting in the abolishment of a 90 mm Hg pressure gradient such that her clinical condition dramatically improved.

CASE REPORT

The patient was a 63-year-old female smoker. She was sent to National Cheng Kung University Hospital because of intermittent bilateral claudication for 1 year. The bilateral claudication could not be relieved by sitting position or flexed-back. Spinal stenosis and spondylosis had been diagnosed before. However, the symptoms became worse progressively. On admission, her blood pressure was 120/80 mmHg for both arms, and her heart rate was 70 beats per minute. Her neck veins were not engorged. A cardiac auscultation revealed a grade II/VI holosystolic murmur over the apex. Her breathing sound was clear. No abdominal bruit was noted. The arterial pulsation of both femoral arteries, popliteal arteries, and pedis dasalis arteries was very weak. Her lower extremities were mildly cold but not cyanotic. The
laboratory data showed normal results except an elevated triglyceride level of 279 mg/dL.

A magnetic resonance angiography (MRA) was performed first which showed a 2-centimeter, asymmetric, discrete abdominal aortic stenosis at the third to fourth lumbar level below bilateral renal arteries (Figure 1). There were no atherosclerotic changes above or below the lesion. Subsequently, abdominal aortography confirmed the findings from the MRA study. The degree of aortic stenosis was 95%. The trans-stenotic pressure gradient was 90 mmHg. Besides, a nearly total occlusion of the inferior mesenteric artery was also noted (Figure 2).

Surgical treatment had been recommended because of symptomatic aortic stenosis. The operation procedures included a graft interposition with eleven-millimeter Hemashield with end-to-end anastomosis and a ligation of the inferior mesenteric artery. The pathological findings of the surgical specimen obtained included the aorta that was eccentrically narrowed by atherosclerotic plaque with an ulceration of the luminal surface; the atherosclerotic plaque was composed of cholesterol clefts, fibrinous material, foamy histiocytes and a proliferation of smooth muscle and fibroblast disrupting the intima and media (Figure 3). In the less affected area, intimal thickening narrowed the lumen. The media was regularly layered, and did not appear disrupted (Figure 4). The patient’s clinical condition improved markedly after the operation. She was discharged in good condition and was well at the latest follow-up, 1 year after being discharged.

DISCUSSION

Localized discrete abdominal aortic stenosis leading to bilateral lower limb claudication is uncommon in Asians, especially among women.\textsuperscript{1,2} Claudication in bilateral lower limbs is frequently misdiagnosed as spinal
stenosis. Careful history-taking and peripheral pulsation examination are very important to differentiate between these two diseases and to make a correct diagnosis. To differentiate neurogenic claudication resulting from spinal stenosis from intermittent claudication resulting from vascular insufficiency, it is very important to inquire about the position and time required for pain relief by rest. Exercise is recommended for patients who have spinal stenosis, and the pain is usually diminished after exercise has stopped, and only when patients are in the sitting position or when the back is flexed. The pain usually persists for hours after resting, and does not begin rapidly after exercise has started. Symptoms of claudication are relieved quickly, usually within minutes after rest in any position.3-5

Magnetic resonance angiography and aortography are useful tools for diagnosing patients presenting with bilateral lower limb claudication. These image studies help determine the extent of disease and etiology. In the case we present here, magnetic resonance angiography and aortography disclosed discrete abdominal aortic stenosis. Diffuse atherosclerosis of the aorta is less likely, but aortic stenosis or coarctation of abdominal aorta should be considered as possible causes. Both discrete aortic stenosis and coarctation of the abdominal aorta have been reported to have the same clinical presentation.6-15 Differentiation between these 2 diseases can only be done following surgery and pathologic examination.12 The histological nature and characteristics of aortic coarctation are not clearly defined.15 The most common pathologic tissue specimen has been an intact aorta with subintimal fibrosis and without inflammatory changes. Often the medial and adventitial layers are normal.7,14 Fibrosis and intimal proliferation with an increase in elastic fibers and collagen in the media may also be found.9 Human coarctation is characterized by intimal recruitment of non-proliferating smooth muscle cells with dedifferentiated phenotypes.15 In the case presented, the pathological findings revealed no evidence of the characteristics of coarctation of the aorta, and the pathology indicated discrete abdominal aortic stenosis rather than coarctation of the abdominal aorta.

The therapeutic methods for discrete abdominal aortic stenosis includes angioplasty and/or stenting or surgical graft implantation; but for coarctation of the aorta only surgical correction was excellent, and angioplasty results were poor due to proliferation of smooth muscle at the lesion site after angioplasty and/or stenting. In this case, we could not make sure whether the diagnosis was discrete abdominal aortic stenosis or coarctation of the abdominal aorta by clinical presentation and imaging studies. Therefore, the patient received the surgical graft implantation.

Based on this observation, we suggest that isolated discrete abdominal aortic stenosis should be considered 1 of the possible causes for patients with intermittent claudication. Appropriate image studies, surgical intervention, and a pathology examination should be suggested for these patients.
REFERENCES