CASE REPORT

Diagnostic and Treatment Algorithm in a Plurivascular Patient – Case Report

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ABSTRACT

Introduction: Atherosclerosis represents the main cause of arterial stenosis, mostly affecting the arteries of the lower extremities. Atherosclerotic arterial disease presents multiple localizations, including the carotid, subclavian, coronary, and kidney arteries. The severity of the stenosis does not always correlate with the symptomatology. Case report: We present the case of a patient with multisite atherosclerotic disease. A 70-year-old smoker male patient, with a history of myocardial infarction and renal artery stenosis, presented in the emergency department complaining of vertigo, chest pain, and intermittent claudication. The diagnostic and treatment algorithm represented a challenge. Imaging assessment showed atherosclerotic lesions in a new vascular territory, which involved the left subclavian artery with a stenosis of 70%. Conclusions: Subclavian artery stenosis can be a hidden form of atherosclerotic disease, often undiagnosed, which needs urgent interventional treatment and can be easily unmasked using simple tools such as measuring the blood pressure on both arms. Patients with atherosclerotic lesions must undergo comprehensive screening for multisite atherosclerotic disease.

Keywords: peripheral artery disease, subclavian stenosis, carotid stenosis

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INTRODUCTION

Peripheral artery disease (PAD) is most commonly manifested in the lower limbs. However, atherosclerosis is a multivessel disease, and a comprehensive assessment of the arterial branches is generally missing in these patients. Although risk factors for PAD in different vascular territories are common, the impact on patient prognosis is variable.¹ The subclavian artery is the most common location for atherosclerosis in the upper extremity, usually with focal involvement of the left side. Subclavian artery stenosis has been shown to affect about 9% of patients with known PAD.² Also, half of patients with subclavian artery disease might have coronary artery disease,³ and renal artery stenosis often is associated.⁴ The symptoms caused by each stenotic segment are well known, but prioritizing the investigations and interventional treatment for each atherosclerotic involvement can be a challenge, especially if they are diagnosed in the same patient simultaneously.

CASE PRESENTATION

We present the case of a 70-year-old non-diabetic male patient who was admitted as an emergency to the medi-
cal ward complaining of vertigo associated with elevated blood pressure (BP), chest pain, as well as pain in the lower limbs with a claudication index of 200 m. The patient presented obesity grade 1, was a former smoker, with a past medical history of myocardial infarction 16 years prior to the current presentation, and grade 2 arterial hypertension for 18 years. The patient also presented lower extremity artery disease stage IIa Fontaine, atherosclerosis of the abdominal aorta, asthma, and atrophy of the right kidney. BP was measured on both arms, revealing a difference of 70 mmHg (190/100 mmHg on the right and 110/80 mmHg on the left arm), which raised the suspicion of a left subclavian artery stenosis. After the hypertensive emergency was solved, in order to confirm the diagnosis, a computed tomography (CT) angiography of the upper thorax and cervical region was performed (Figure 1), which showed diffuse atherosclerotic lesions of the aortic arch and of the origin of its branches. On the left subclavian artery, a 70% stenosis was revealed, and the vertebral arteries were visualized bilaterally.

However, the patient did not display other neurological signs of a possible cerebrovascular event, and the neurological examination was negative. In order to evaluate a possible multivessel disease and hypertension-mediated organ damage, a carotid artery duplex ultrasound was carried out, which showed bilateral severe carotid artery stenosis, with a 90% stenosis of the left common carotid artery and an average intima-media thickness of 1.4 mm. Given the presence of carotid artery lesions and the left subclavian artery stenosis responsible for elevated BP values and vertigo, in order to prioritize treatment of the culprit lesion, carotid artery angiography was performed, which revealed a 70–80% stenosis of the right proximal internal carotid artery, a 90% stenosis of the mid segment of the left common carotid artery, as well as a 70–80% stenosis of the right proximal internal carotid artery. Catheter-based repermeabilization of the subclavian and carotid arteries was attempted without success.

In order to assess the severity of the lower extremity artery disease, the ankle–brachial index was measured, with reduced values on both sides, 0.61 on the right and 0.7 on the left limb. Duplex ultrasound of the legs showed an occlusion of the mid segment of the right superficial femoral artery and significant stenosis of the left external iliac artery, as well as severe stenosis of the left common femoral artery before the bifurcation. Given the pain in the lower limbs suggestive for lower extremity artery disease, the patient was scheduled for lower limb invasive arteriography in order to quantify the severity of the lesions in the legs. The examination revealed severe stenosis of the right proximal external iliac artery and of the left common iliac artery, which were treated by implanting a Zeus CC 7.0/40 mm stent and a 9.0/40 mm stent, respectively. Further interventional treatment addressed the distal occlusion of the left superficial femoral artery, where percutaneous transluminal balloon angioplasty was performed by using an Armada 5.0/60 mm balloon at 6 ATM and 8–10 ATM, respectively, with favorable angiographic result and residual occlusion of the left interosseous and posterior tibial artery.

In order to assess hypertension-mediated organ damage and to search for further vascular damage, a 12-lead electrocardiogram (ECG) was performed, which showed sinus rhythm, heart rate of 82 beats/minute, left axis deviation, Q waves in DIII, V2, and V3 leads, as well as negative T wave in aVL. The transthoracic 2D echocar-
Subclavian artery stenosis can be a hidden form of atherosclerotic peripheral artery disease, but with a careful physical examination, including blood pressure measurement in both arms, it is easy to unmask. Also, patients
with known atherosclerotic lesions should undergo a comprehensive evaluation and screening for multisite artery disease.

**CONFLICT OF INTEREST**

Nothing to declare.

**REFERENCES**


