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Case Report

Discrepancy of blood pressure between limbs bilateral subclavian artery stenosis: a case report

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ABSTRACT

Bilateral subclavian artery stenosis is a rare condition which usually presents with claudication pain associated with severe cardiac complications. Here we describe a rare case of asymptomatic bilateral subclavian artery stenosis. On examination, the patient was drowsy, dehydrated, and hypotensive, with evidence of DKA, for which the patient was treated, but the hypotension was persistent, with blood pressure in the lower limb more than that of the upper limb. A complete examination was done, and the USG neck and CT Aortogram showed retrograde flow in the left vertebral artery, increased flow velocity in the subclavian artery and filling defect in the bilateral subclavian artery, respectively. Thus, bilateral subclavian artery stenosis was diagnosed and treated accordingly.

Keywords: Hypotension, Hyperglycemia, Filling defect

INTRODUCTION

Subclavian artery, large blood vessels supply blood to the left and right arms. The subclavian arteries are located just under the clavicle (collarbone) on each side of the body, which is why they are called subclavian. The innominate artery gives a branch called the left subclavian artery, most commonly gets affected than the right subclavian artery.[1] Subclavian artery stenosis is an uncommon condition that commonly presents cardiovascular complications in the sixth or seventh decade. Most patients present with coronary artery disease, while some present with carotid or vertebral disease.[2] With significant narrowing of the subclavian artery, a common symptom is muscle cramping with arm use due to insufficient blood flow (known as claudication).[3] In this case report, we would like to discuss a rare case of subclavian stenosis, which was an incidental finding of a patient presented with hyperglycemia.

CASE REPORT

Our patient, a 53 years old male who has been a known case of diabetes mellitus for the past 20 years on insulin injections, came with complaints of breathlessness, multiple episodes of vomiting, and generalized tiredness and his CBG was found to be 486 g/dl. On examination, the patient was drowsy and oriented with stable vitals. Dehydration was present with 2+ urine acetone, and ABG showed metabolic acidosis. He was diagnosed with DKA and was treated with isotonic saline (10-20 ml/kg/Hour), Insulin at the rate of 0.1 units/hour infusion. He then recovered from DKA, but his blood pressure was persistently low.

His presentation of hypotension with raised sugar levels gave an initial suspicion of hyperglycemia-induced hypotension. A complete haemogram showed TC-5900, CRP 2.1 mg/L. RFT and LFT were within normal limits. Fasting lipid profile showed total cholesterol-5.0 mmol/L, LDL-3.5 mmol/L, TGL-1.6 mmol/L. We then treated him for DKA, and he recovered, but his blood pressure was persistently low. His serum cortisol was 82 nmol/L. We then assessed his cardiovascular system, and the 2d ECHO was normal. Four limbs BP showed lower limb blood pressure more than his upper limb blood pressure. (Right LL-180/90 mmHg, left LL-150/90 mmHg, right UL-90/70

mmHg, left UL-80/50 mmhg). Next, we did a USG neck which showed retrograde flow in the left vertebral artery and increased flow velocity in the subclavian artery, following which we did CT Aortogram where we found circumferential atheromatous calcific plaques involving arch and descending thoracic aorta, Filling defect in Left subclavian artery causing 80-90% stenosis, filling defect in right subclavian artery 30-40 % stenosis.

There can be various causes for subclavian stenoses, such as atherosclerosis, thoracic outlet syndrome, and vasculitis. But considering his chronic history of diabetes mellitus and dyslipidemia, we attributed his subclavian artery stenosis to atherosclerosis. We then got a vascular surgery opinion, and he was deferred from surgery as he had no ischemic symptoms.

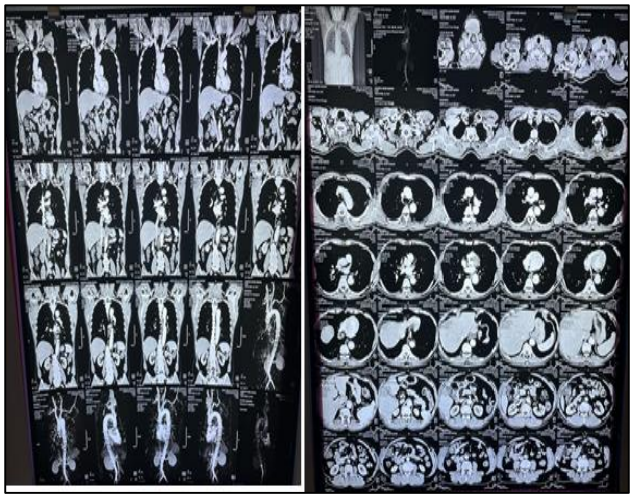

Figure 1 CT-aortogram.

DISCUSSION

The significance of four limb blood pressure measurement in patients with hypotension, without any symptoms, is highlighted in this case. In most settings, only unilateral upper limb BP will be measured. In a study with around 6814 participants with no known comorbidities, subclavian artery stenosis with a difference in BP of more than 15 mmHg was seen in less than 5% of the cohort. Almost all the lesions were unilateral.[4]

Bilateral subclavian artery stenosis is quite rare. In a study including 23000 patients with comorbidities such as CAD, 250 patients had unilateral subclavian stenosis, and only 2 patients had bilateral subclavian stenosis (<0.1% of the study population), with more severity in the left subclavian artery.[5] The left subclavian artery is more commonly involved than the right in bilateral subclavian artery stenosis.[6]

Similarly, our patient has a left subclavian artery occlusion of 80-90% while the right has 30-40%. The reason behind the left subclavian artery commonly having more occlusion than the right subclavian artery is its acute angle resulting in greater turbulence and accelerating the atherosclerotic process.[7]

Subclavian artery stenosis can be diagnosed with radiological imaging such as CT aortography.

Subclavian artery stenosis is seen in patients with comorbidities like T2DM, hypertension, smoking, and dyslipidemia.[4] In addition, complications are seen in patients with subclavian artery stenosis, with more than 50% occlusion. Common complications of subclavian artery stenosis are MI, stroke.[4,8,9] Although patients might not present with classic symptoms like claudication, in our case, the patient presented with hyperglycemia, and his only risk factor was T2DM. Detailed clinical examination, including four limb blood pressure and clinical suspicion, led to our patient's diagnosis of subclavian artery stenosis.

Though our patient presented with increased sugar levels and was treated for the same, his persistent hypotension and our detailed clinical examination and clinical suspicion led us to the diagnosis with the radiological investigation. This case report highlights the significance of the clinical study, which may be overlooked in modern medical practice where laboratory and radiological investigations are readily available.

Early diagnosis and treatment of atherosclerotic diseases might be beneficial in reducing the risks for future development of cardiovascular complications.

CONCLUSION

Cardiovascular complications can be prevented if the atherosclerotic disease is diagnosed early and treated appropriately. In our case, persistent hypotension, even after treating his primary complaint of increased sugar levels, helped diagnose subclavian artery stenosis and thus prevented cardiac complications. However, radiological and laboratory investigations are not replacements for clinical examinations, and therefore clinical examination should be routinely performed in all the patients, and four limb blood pressure measurements should be performed in all the patients with hypotension.

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