

Acute Upper Limb Ischemia Secondary to Primary Left Subclavian Thromboembolism: A Case Report

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ABSTRACT

Acute primary subclavian thromboembolism by itself is an infrequent occurrence. Literature reports a prevalence of less than 1% in the world population. It remains crucial to have a high suspicion of such cases as they are usually asymptomatic. Early treatment is imperative to avoid complications. Treatment modalities vary depending on the cause of the disease. We report a 46-year-old previously healthy female in the Emergency Department who presented with excruciating pain and bluish discoloration of the fourth and fifth digits of the left upper limb. A Computed tomography angiogram showed partial thromboembolism of the left subclavian artery.

Key Words: Brief loss of consciousness, mediastinal segment, computed tomography angiography scans

Introduction

The Subclavian arteries are a pair of arteries that supply blood to the upper extremities. The right subclavian artery originates from the bifurcation of the innominate artery. In contrast, the left arises from the aortic arch distal to the common carotid artery. The prevalence of subclavian artery thrombosis is less than 1% therefore, identification requires a high index of suspicion in a primary care setting to prevent complications [1]. The clinical presentation of acute upper limb ischemia is categorized based on some underlying disorders, either as big vessel disease acute or chronic arterial occlusive disease proximal to the wrist or small vessel disease chronic arterial occlusive disease distal to the wrist with 17% of cases affecting the upper extremity on average [2]. This case report aims to discuss clinical presentation, diagnostic challenges, and management complexities in a patient with thromboembolism of the subclavian artery.

Case Report

A 46-year-old previously healthy female with a one-day history of dizziness, nausea, vomiting, and a brief loss of consciousness attended our emergency department. In addition, she had excruciating pain and bluish discoloration of the fourth and fifth digits of the left upper limb (Figure 1). She was hemodynamically stable

with regular equal pulses bilaterally in the upper limbs. Blood pressure readings on her arms showed no discrepancies. ECG showed a sinus rhythm. An emergent computed tomography angiogram of the head and neck showed a filling defect in the origin of the left subclavian artery in the mediastinal segment. there was no extension to the ostium of the left vertebral artery, distal branches of the neck, axillary, brachial, radial, or ulnar segments. in addition, there were filling defects in the dorsal metacarpal artery of the fourth finger and a lack of visualization of the metacarpal artery of the fifth finger, attenuated median artery before joining the deep palmar arch, concerning distal emboli (Figure 2,3), The patient was admitted to the hospital and underwent numerous investigations, which included x-ray of the chest and hand, electrocardiography, echocardiogram, transesophageal echocardiogram, computed tomography angiography scans, and magnetic resonance imaging along with immunological testing, which were all deemed normal except for microcytic anemia. She was managed conservatively with heparin 5000 units for six days. Her hospital stay was unremarkable, and she was discharged home with aspirin and rivaroxaban for two weeks. Unfortunately, she did not return for a follow-up.

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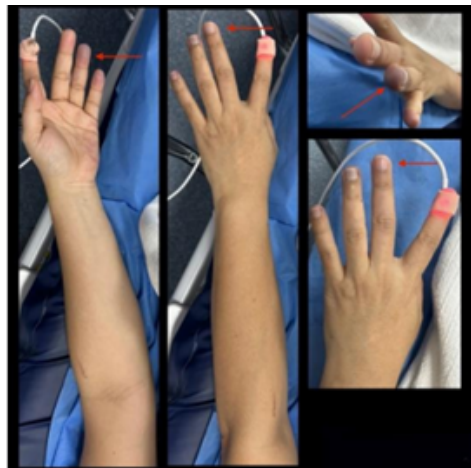


Figure 1: At presentation of the patient to the Emergency department showing bluish discoloration of the fourth and fifth digits of the left upper limb.



Figure 2: Computed tomography Angiography scan of the left upper extremity shows filling defect in the origin of the left subclavian artery in the mediastinal segment not extends to the ostium of left vertebral artery, or distal branches of the neck, axillary, brachial, radial or ulnar segments. However there is filling defects in the dorsal metacarpal artery of fourth finger, and lack of visualization of the metacarpal artery of fifth finger, attenuated median artery before joining the deep palmar arch, concerning distal emboli.

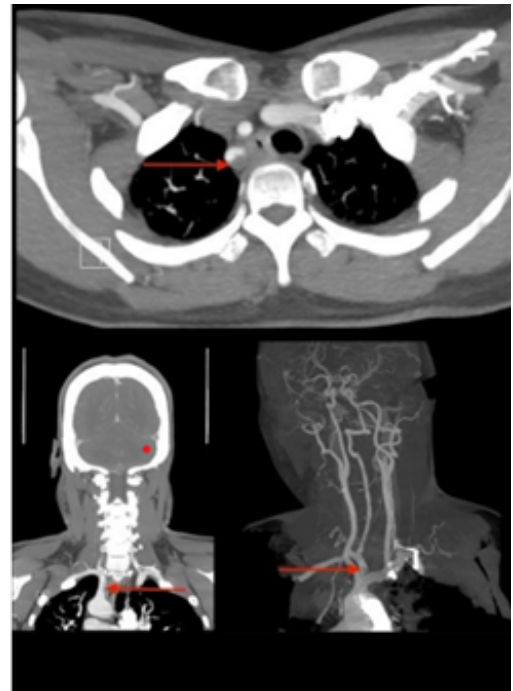


Figure 3: Computed tomography Angiography scan with and without contrast of the head and neck depicts filling defect (thrombus) in the origin of the left subclavian artery in the mediastinal segment not extends to the ostium of left vertebral artery/distal branches of the neck segment of the corresponding vessel, the mentioned thrombus is not compromising distal flow within the vessel. Conventional anatomy of the aortic arch. Both carotid and vertebral arteries were opacified and appear normal without evidence of narrowing or occlusion.

Discussion

Acute upper extremity ischemia due to thromboembolism of the subclavian artery remains underdiagnosed and is usually asymptomatic. The left subclavian artery has a fourfold predilection for thrombosis compared to the right, possibly due to its acute origin leading to increased turbulence accelerating the disease process like atherosclerosis [1]. Major risk factors for developing thrombus include hypertension, diabetes, obesity, smoking, hypercoagulable states, and trauma. However, our patient did not have any of them.

Acute occlusion usually presents with a painful, cold, and pulseless limb. Neurological signs like dizziness, syncope, drop attacks, dysarthria, diplopia, nystagmus, facial sensory deficits, and tinnitus manifest due to vertebrobasilar insufficiency if the thrombosis originates proximal to the origin of the vertebral artery. A cardiovascular examination may reveal unequal blood pressure readings in both arms. Pulse examination may include absent, diminished axillary, radial, and brachial pulses [3]. However, in our case, because it was a partial occlusion and not a complete occlusion, there were no such discrepancies noted during her presentation to the hospital. Diagnostic imaging remains the gold standard for diagnosis. However, initial laboratory workups typically are non-diagnostic. Still, they should include complete blood count, prothrombin time, antithrombin III levels, alpha-macroglobulin levels, plasminogen levels, clotting factors, protein C/S, Factor V Leiden which are usually unremarkable yield like in this case, which only showed microcytic anemia. Duplex ultrasound with the color flow is the choice of investigation for noninvasive imaging. However, we instead proceeded with CT angiography. C angiography and magnetic resonance angiography are required when an intervention is necessary. An echocardiogram is needed to rule out sources of arterial thrombi [4]. Our patient underwent this investigation. Therapeutic intervention includes medical and surgical modalities. Systemic anticoagulation

was done in our case because it minimizes the propagation of ongoing thrombosis, preventing ischemia and gangrene. Catheter-directed thrombolytic therapy may be indicated for superimposed clot formation in stenosis areas until definitive obstruction treatment can occur. However, our case did not require such an intervention. Along with anticoagulation, the treatment modality is to treat the underlying cause. For atherosclerosis, initiate treatment with aspirin or clopidogrel, statins, angiotensin receptor inhibitors, or angiotensin-converting enzyme inhibitors, HMG-CoA reductase inhibitor [1]. Surgical options include axillary-axillary bypass, carotid-subclavian bypass, and subclavian artery transposition. However, endovascular intervention like percutaneous transluminal angioplasty with stenting is the best modality for relieving subclavian artery thrombosis [1, 5]. Our patient presented with an ischemic fourth and fifth finger of the left proximal extremity with vertebrobasilar insufficiency symptoms, probably due to an embolism that prompted her attendance at the emergency department, requiring immediate care. However, not all cases present this way; hence, diagnosis is often delayed.

Conclusion

It is essential to suspect subclavian artery thromboembolism in somebody with risk factors who presents with hand claudication or digital ischemia.

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