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Case Report

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A Rare Case of Thrombosis in an Aberrant Right Subclavian Artery

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ABSTRACT

A 57-year-old female patient presented with acute onset of pain and bluish discoloration of the right hand. Physical examination revealed a cold, cyanotic right hand with absent radial, ulnar, and brachial pulses. Laboratory evaluation showed no pathological abnormalities, and there was no history of chronic disease or recent surgical intervention.

Urgent CT angiography of the thorax and upper extremity demonstrated an aberrant right subclavian artery consistent with Adachi and Williams Classification Type G, with complete luminal occlusion caused by a 25-mm thrombus. Additional thrombotic occlusion of the distal axillary and proximal brachial arteries was also identified.

This rare presentation highlights aberrant right subclavian artery thrombosis as an important cause of acute upper extremity ischemia and underscores the need to consider both congenital vascular variants and alternative thrombotic etiologies in the differential diagnosis of acute arterial occlusion.

Introduction

An aberrant right subclavian artery (ARSA), also known as arteria lusoria [1], represents the most common congenital anomaly of the aortic arch [2], with an incidence of approximately 0.5–2% in the general population. In this anatomical variation, the right subclavian artery arises distally from the aortic arch and passes posterior to the esophagus to reach the right upper limb. Although most cases remain asymptomatic and are discovered incidentally during imaging [3], the condition may occasionally present with dysphagia, chest discomfort, or vascular complications such as aneurysm, dissection, or thrombosis.

Thrombosis involving an aberrant right subclavian artery is exceedingly rare [4] and has been only sporadically reported in the literature. Recognition of this vascular variation is crucial, as thrombosis can result in acute upper extremity ischemia and may be misdiagnosed without appropriate imaging. We report a rare case of complete thrombosis [5] of an aberrant right subclavian artery consistent with Adachi and Williams Classification Type G [6], leading to acute ischemia of the right upper extremity.

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Case Presentation

A 57-year-old female patient presented to the emergency department with acute onset of bluish discoloration and pain in the right hand. She was alert and reported that her right arm had suddenly turned blue. The patient had recently experienced pain in the thenar region and fingers. On physical examination, the right hand appeared cyanotic and cold to touch. The radial, ulnar, and brachial pulses were not palpable.

Laboratory evaluation revealed no pathological abnormalities, and the patient's medical history was unremarkable for chronic diseases or recent surgical procedures. In addition, an evaluation for common acquired and inherited prothrombotic conditions was performed, and no clinical or laboratory evidence of thrombophilia, autoimmune disease, or drug-related thrombosis was identified.

An urgent CT angiography of the thorax and upper extremity demonstrated an aberrant right subclavian artery consistent with Adachi and Williams Classification Type G. The CT angiogram revealed a 25 mm long thrombus completely occluding the lumen of the aberrant right subclavian artery originating from the distal portion of the aortic arch (Figure 1). In addition, total occlusion of the distal axillary and proximal brachial arteries was observed (Figure 2). No

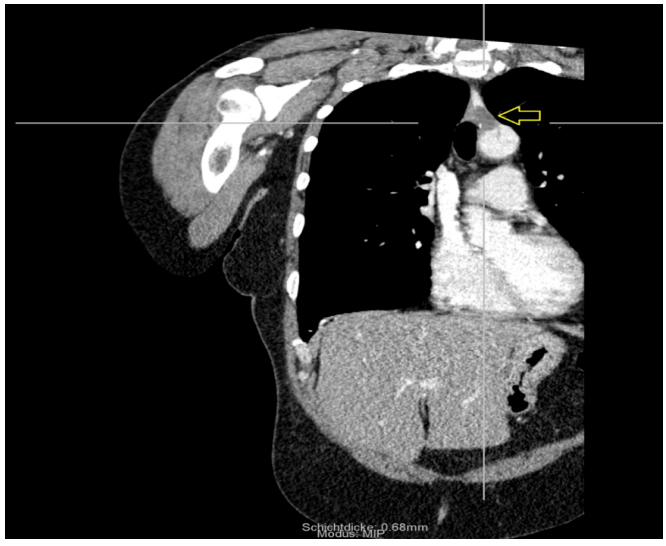

Fig. 1. CT angiography of the thorax demonstrating complete thrombosis of an aberrant right subclavian artery. The thrombus (arrow) completely occludes the lumen of the aberrant vessel arising from the distal aortic arch.

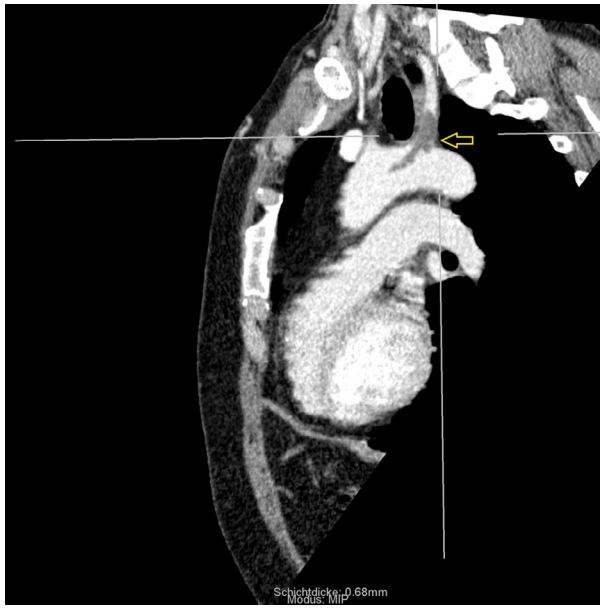

Fig. 2. Thrombus occluding a hanging aberrant subclavian artery arising from the aortic arch.

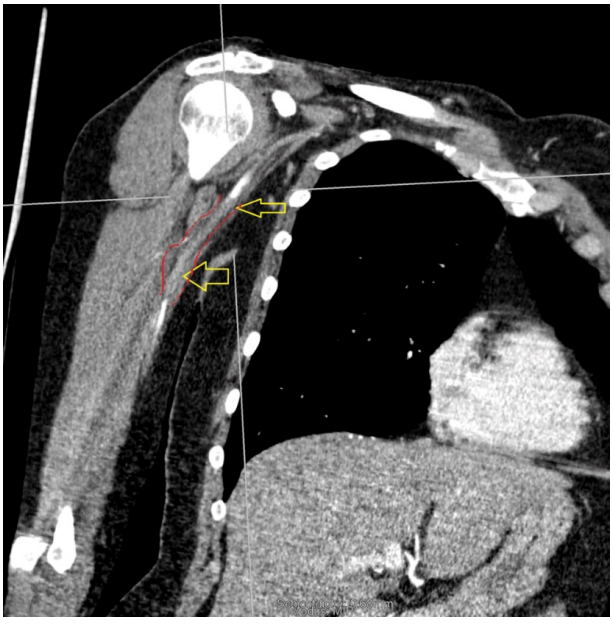

Fig. 3. Long thrombus at the axilla-brachial junction.

other major vascular abnormalities were detected.

Based on the imaging findings, a diagnosis of complete thrombosis of an aberrant right subclavian artery leading to acute ischemia of the right upper extremity was made (Figure 3), and the patient was urgently referred to the vascular surgery team. The patient was managed with systemic anticoagulation followed by definitive vascular intervention. Clinical improvement was observed, with resolution of pain and cyanosis of the right hand. At the 3-month follow-up, distal perfusion of the right upper extremity was preserved, and no recurrent ischemic symptoms were noted. The patient remains under regular outpatient follow-up without evidence of recurrent thrombosis.

Discussion

An aberrant right subclavian artery (ARSA), also known as arteria lusoria, is the most common congenital anomaly of the aortic arch, occurring in approximately 0.5–2% of the population. In this variation, the right subclavian artery originates distal to the left subclavian artery and usually courses posterior to the esophagus to reach the right upper limb [2]. Most cases are asymptomatic and discovered incidentally during imaging or autopsy. However, some patients may present with symptoms related to esophageal or tracheal compression, such as dysphagia lusoria or dyspnea, while vascular complications including aneurysm formation, dissection, or thrombosis are exceedingly rare.

In our case, CT angiography demonstrated a complete thrombosis of an aberrant right subclavian artery consistent with Adachi and Williams Classification Type G, resulting in acute ischemia of the right upper limb. The presence of concomitant thrombosis in the distal axillary and proximal brachial arteries highlights the potential severity of this condition. The coexistence of thrombotic occlusion in the axillary and brachial arteries may raise concern for a systemic prothrombotic disorder; however, no secondary etiology was identified in our patient. This supports the hypothesis that local flow disturbance and endothelial stress related to the aberrant subclavian artery anatomy may play a central role in thrombus formation. Recognition of this variant is essential, as delayed diagnosis or misinterpretation may lead to irreversible ischemic damage.

The pathophysiology of thrombosis in an aberrant subclavian artery remains unclear, but factors such as turbulent flow at the origin of the aberrant vessel [1], atherosclerotic changes, or external compression may contribute. Diagnosis relies primarily on CT angiography, which allows accurate assessment of both the vascular anatomy and the extent of thrombotic occlusion.

Management strategies depend on the extent of ischemia and patient condition. Treatment options include anticoagulation, thrombolysis, endovascular intervention, or surgical revascularization [4]. In our patient, the acute presentation with total occlusion necessitated immediate vascular surgical evaluation.

To the best of our knowledge, no similar case of

complete thrombosis in an aberrant right subclavian artery of Adachi and Williams Type G configuration has been reported previously in the literature. This case underscores the importance of considering rare vascular variants as potential causes of acute limb ischemia and highlights the diagnostic value of CT angiography in such scenarios.

Conclusions

Thrombosis of an aberrant right subclavian artery is an exceptionally rare vascular event that may present with acute upper extremity ischemia. Awareness of this anatomical variation is crucial for accurate diagnosis and timely management. CT angiography remains the imaging modality of choice, allowing precise identification of both the vascular anomaly and the extent of thrombosis. Early recognition and prompt referral for vascular intervention can prevent irreversible ischemic complications. This case highlights the importance of considering rare aortic arch variants as potential causes of acute limb ischemia and expands the limited literature on this rare condition.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this article.

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Conflict of Interests

The authors have no conflict of interest to declare.

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