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Takayasu Arteritis in a Young Female Patient: A Case Report

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Abstract **Case Report**

Takayasu arteritis (TA) is a rare chronic inflammatory vasculitis that primarily affects large vessels like the aorta, mainly in women under 40, particularly of Asian descent. Its exact cause is unknown but is linked to cell-mediated inflammation, leading to complications such as occlusion and aneurysms. Symptoms vary widely, complicating diagnosis. Modern imaging techniques like computed tomography angiography (CTA) are crucial for early detection, which can significantly reduce complications. This case report highlights a 28-year-old woman with extensive aorto-arteritis, underscoring the importance of timely imaging and intervention in managing TA.

Keywords: Takayasu arteritis, young female, CT scan.

INTRODUCTION

Takayasu arteritis (TA) is a rare chronic inflammatory vasculitis that primarily affects large vessels like the aorta and its major branches [1], predominantly in women under 40, with a higher prevalence in Asian populations [2, 3]. Although the exact cause is unknown, TA is believed to involve cell-mediated inflammation, leading to vascular occlusion, aneurysms, and stenosis [4]. Symptoms can vary depending on the affected vessels, ranging from limb weakness, headaches, and syncope to serious complications like stroke. The disease often presents with systemic signs such as fever, weight loss, and fatigue, particularly during its acute phase.

The diagnosis was traditionally confirmed through aortic arteriography; however, modern imaging techniques such as angio-MRI or angio-CT are now used to assess all branches of the aorta more comprehensively [5]. TA is frequently underdiagnosed at onset, and its activity may be underestimated due to nonspecific symptoms, lack of definitive biomarkers, and difficulty in tracking disease progression [6]. Nevertheless, with appropriate care, TA is associated with a low overall mortality rate.

We report the case of a 28-year-old woman presenting with extensive aorto-arteritis involving the aortic arch and its branches, a typical feature of Takayasu arteritis.

CASE REPORT

A 28-year-old female patient presented to our hospital with a six-month history of persistent headache, uncontrolled hypertension, and episodes of syncope, which had worsened over the past three days due to moderate hemoptysis and metrorrhagia. On physical examination, there was an absence of detectable pulse in her left upper limb, with undetectable blood pressure on the same side. Her vitals at the time of admission revealed a blood pressure of 168/94 mmHg in the right upper limb, a pulse rate of 79 beats per minute (measured at the radial artery in the right upper limb), a respiratory rate of 16 breaths per minute, a temperature of 37.6°C, and an oxygen saturation (SpO2) of 94% on room air.

Despite these concerning clinical findings, the patient did not report any history of fever or visual disturbances. Furthermore, there was no significant family history of cardiovascular or autoimmune disorders.

Trans-thoracic echocardiography, electrocardiogram (ECG), and chest radiography carried out afterward showed no significant abnormalities.

A computed tomography angiography (CTA) was performed, which revealed signs consistent with Takayasu arteritis, demonstrating arterial inflammation and narrowing involving the major branches of the aorta, extending to the origin of the great vessels (trunk of supra-aortic arteries).

The patient underwent additional complementary examinations and was promptly initiated on corticosteroid therapy to control the underlying inflammatory vasculitis. She was advised to follow up regularly to assess her response to treatment and monitor disease progression.

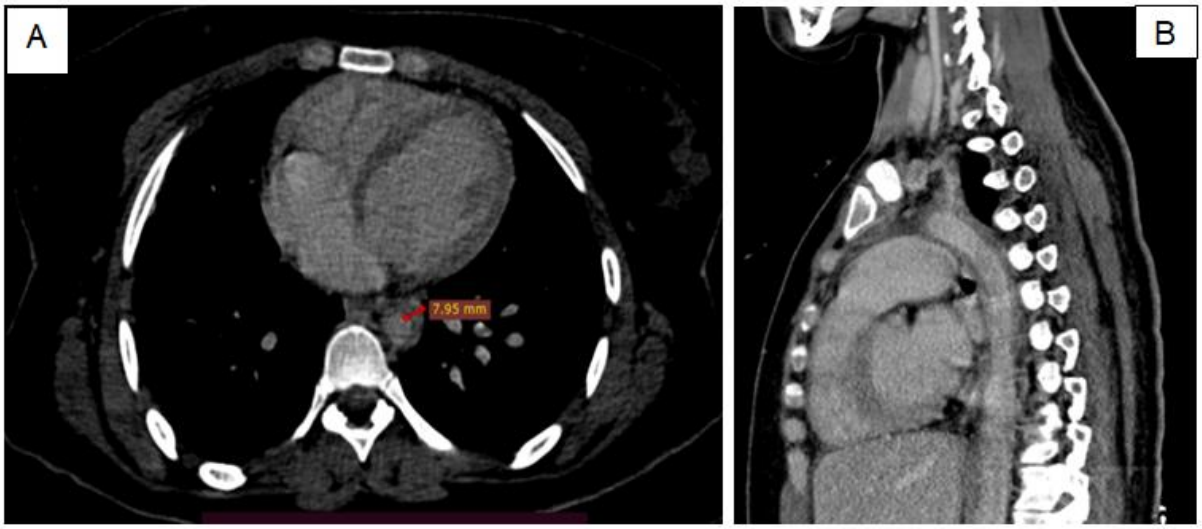

Figure 1: Cervicothoracic CT scan in axial (A) and sagittal (B) sections reveals diffuse mural thickening of the aortic arch and descending aorta, measuring a maximum thickness of 8 mm. This thickening is non-enhanced following the injection of the contrast medium (PDC) and is noted at the level of the supra-aortic trunks

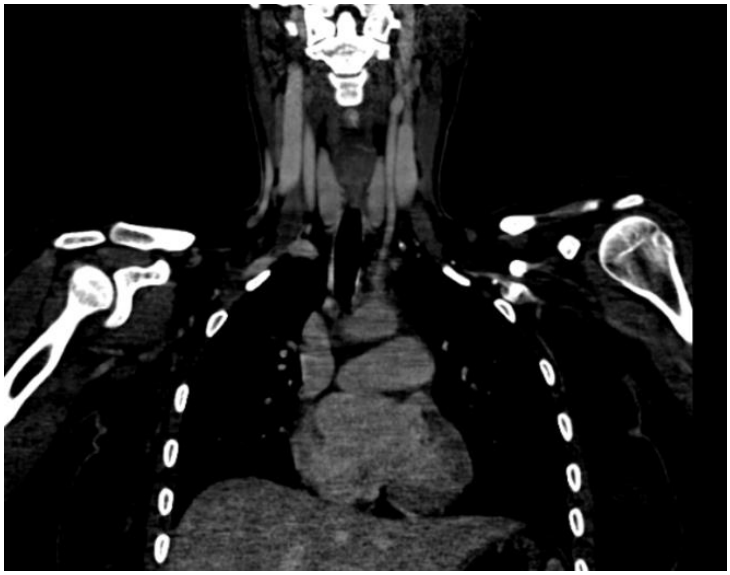

Figure 2: Coronal cervicothoracic CT scan shows left common carotid artery appears narrowed compared to the right, leading to a reduction in its lumen size

DISCUSSION

An estimated 1–2 million people worldwide are affected by the rare vasculitis known as Takayasu arteritis (TA) [7]. The typical patient, originally described as a young female under 40 with East Asian ancestry, reflects the majority demographic seen in the literature [8]. Most patients are female and in their third decade of life [6]. Our case involved a 28-year-old female patient, aligning with the literature that highlights young women as the primary group affected by TA.

Three potential etiological factors have been linked to Takayasu arteritis (TA), though its exact cause remains unclear. These include cell-mediated autoimmunity (involving natural killer cells and T-cells), infections such as viruses or Mycobacterium tuberculosis, and genetic factors, including associations with monozygotic twins [8].

The subclavian artery (Left > Right), common carotid (Left > Right), renal, vertebral, and innominate arteries are the branches most frequently affected in the disease's prevalent pattern [8]. Our patient exhibited circumferential smooth, soft tissue thickening involving the innominate artery, the left common carotid artery, the

left subclavian artery, the aortic arch, and the descending aorta.

The wide range of symptoms poses a significant challenge in diagnosing TA. The disease may be asymptomatic or present with various symptoms depending on the vascular areas involved. The condition is often categorized into two stages: the acute 'pre pulseless' phase with nonspecific inflammatory symptoms such as fever, malaise, myalgia, and weight loss [6], and the chronic phase characterized by symptoms specific to vascular involvement. In this case, the patient presented with headaches, hypertension, and upper limb weakness, which aligned with the vascular regions affected.

Historically, angiography was considered the gold standard for diagnosing TA, but CT angiography is now more commonly used due to its ability to assess wall inflammation [9]. Newer techniques, such as 18F-fluorodeoxyglucose positron emission tomography (FDG-PET) and magnetic resonance angiography (MRA), can detect pre-stenotic changes and monitor treatment responses [10].

Early initiation of corticosteroid therapy, the cornerstone of treatment, is crucial in managing inflammation. While approximately half of TA patients respond to steroids, others may require additional immunosuppressants such as methotrexate or azathioprine [9]. Our patient was promptly started on steroid therapy and advised to follow up regularly to monitor her response to treatment and disease progression.

CONCLUSION

Takayasu arteritis is a rare vascular condition that complicates diagnosis based on clinical symptoms alone. Nonetheless, early detection is possible through radiological methods such as computed tomography angiography. This approach can significantly reduce the risk of complications and permanent damage to affected organs.

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