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The Tuberculosis Imitator: A Rare Presentation of Takayasu Arteritis

Dr. Lucky
PG Resident,
Department of Medicine, Rama Medical College Hospital & Research Centre, Pilkhuwa, Hapur, U.P.
Co-Author
Dr. Deepti Gujral Saha
Associate Professor,
Department of Medicine, Rama Medical College Hospital & Research Centre, Pilkhuwa, Hapur, U.P.

Abstract :

Takayasu Arteritis (TA) is a rare, chronic, granulomatous large-vessel vasculitis that primarily affects the aorta and its major branches. Its clinical presentation often overlaps with several infectious and inflammatory disorders, leading to frequent diagnostic delays. Among these, pulmonary tuberculosis remains one of the closest clinical mimickers due to shared constitutional symptoms such as fever, weight loss, anorexia, fatigue, and elevated inflammatory markers. This case study presents a rare scenario of Takayasu Arteritis initially misdiagnosed as pulmonary tuberculosis, highlighting the clinical challenges in differentiating between the two. The patient, a young female, presented with prolonged low-grade fever, constitutional symptoms, and intermittent chest discomfort. Laboratory evaluation revealed elevated ESR and CRP levels, leading to an initial presumptive diagnosis of tuberculosis. Lack of response to anti-tubercular therapy prompted further evaluation. Detailed vascular assessment using CT angiography revealed characteristic findings of ***arterial wall thickening****,* ***luminal narrowing****, and* ***segmental stenosis****, consistent with Type II Takayasu Arteritis. Early identification and appropriate immunosuppressive therapy led to marked symptomatic improvement. This case emphasizes the significance of considering TA as a differential diagnosis in patients presenting with tuberculosis-like symptoms but failing to respond to anti-tubercular therapy. Furthermore, it underscores the importance of early imaging, multidisciplinary evaluation, and timely immunomodulatory treatment to prevent long-term vascular complications such as ischemia, aneurysm formation, and organ dysfunction. Enhancing clinician awareness is critical in endemic regions where tuberculosis is highly prevalent and frequently obscures other rare but serious conditions. This report adds to the existing knowledge by highlighting the diagnostic pitfalls associated with TA and reinforcing the need for heightened vigilance in atypical presentations.*

Keywords:

Takayasu Arteritis, Tuberculosis Mimicker, Large-Vessel Vasculitis, Aortic Inflammation, Granulomatous Disease, CT Angiography, Misdiagnosis

Introduction:

Takayasu Arteritis (TA) is a chronic, idiopathic, granulomatous vasculitis that predominantly affects large vessels, particularly the aorta and its major branches. The disease is more common in young females and often presents with a wide spectrum of non-specific systemic features during its early inflammatory phase. These include low-grade fever, malaise, weight loss, night

sweats, and generalized weakness. Such constitutional symptoms closely resemble infectious diseases, particularly **tuberculosis (TB)**, which is highly prevalent in India. This clinical overlap frequently contributes to diagnostic uncertainty and misclassification, delaying appropriate management. Tuberculosis remains a leading cause of chronic febrile illness in the country, and therefore, clinicians often initiate empirical anti-tubercular therapy (ATT) when initial findings suggest chronic inflammatory pathology. However, failure to respond to ATT should prompt evaluation for alternative diagnoses, including autoimmune and vascular conditions like TA. The disease pathogenesis involves granulomatous inflammation of the arterial wall, resulting in progressive stenosis, occlusion, or aneurysm formation. These vascular changes may present with diverse manifestations ranging from absent peripheral pulses to hypertension, limb claudication, and organ ischemia. The diagnosis of TA is often challenging during its early phase, as classical vascular signs appear later in the disease course. Imaging modalities such as CT angiography, MR angiography, and PET-CT have significantly improved diagnostic accuracy by allowing visualization of vessel wall inflammation and luminal abnormalities. In regions with a high burden of tuberculosis, misdiagnosis is common as both diseases share elevated ESR, CRP, and constitutional symptoms. Moreover, chest imaging may reveal non-specific findings that further complicate differentiation. This case report aims to highlight the clinical challenges associated with diagnosing TA in a TB-endemic setting and emphasizes the importance of early imaging and multidisciplinary evaluation. The case underscores the need for heightened clinical suspicion to avoid delays that may lead to irreversible vascular damage and increased morbidity.

Materials and Methods :

This study presents an observational case analysis conducted at the Department of Medicine, Rama Medical College Hospital & Research Centre, Pilkhuwa, Hapur. The study duration was from 20/10/2023 to 30/05/2024. A single patient presenting with chronic constitutional symptoms was evaluated systematically following a structured clinical workflow designed to rule out common infectious and autoimmune conditions. The patient, a young female with no significant past medical history, presented with recurrent low-grade fever, progressive weight loss, generalized fatigue, and intermittent chest discomfort. A detailed clinical history was obtained focusing on symptom onset, progression, associated respiratory complaints, history of TB exposure, menstrual history, and risk factors for autoimmune diseases. A comprehensive physical examination included vital measurements, peripheral pulse assessment, blood pressure comparison in both upper limbs, cardiac auscultation, and systemic examination. Initial laboratory investigations included complete blood count, ESR, CRP, liver and renal function tests, thyroid profile, fasting glucose levels, HbA1c, urinalysis, and serum electrolytes. Given the high prevalence of TB in the region, specific tests such as Mantoux, sputum AFB smear, CBNAAT, and chest radiography were performed. Additional serological tests including ANA, ANCA, rheumatoid factor, and complement levels were ordered to rule out autoimmune conditions. The patient demonstrated markedly elevated ESR and CRP levels with mild anemia but tested negative for all TB-specific assays. Despite this, considering endemic prevalence and constitutional symptoms, the patient was started empirically on anti-tubercular therapy (ATT). After six weeks of treatment, persistent symptoms and absence of clinical improvement prompted re-evaluation. A Doppler study of carotid and subclavian arteries was performed, which showed reduced flow in the left subclavian artery. Subsequently, CT angiography of the aorta and its major branches was conducted. Imaging revealed

circumferential wall thickening of the aortic arch and narrowing of the left subclavian and left common carotid arteries, indicative of Type II Takayasu Arteritis. Based on imaging findings and clinical features, the diagnosis was confirmed as per ACR (American College of Rheumatology) criteria. The patient was immediately started on high-dose corticosteroids (prednisolone 1 mg/kg/day) along with calcium and vitamin D supplementation. Methotrexate was added as a steroid-sparing agent. Follow-up was scheduled at two-week intervals to monitor inflammatory markers, blood pressure, and symptom progression. ESR and CRP were recorded regularly to assess treatment response. The patient demonstrated significant clinical improvement within four weeks, with reduction in fever episodes, improved appetite, and decreased fatigue. Repeat angiography after three months showed reduced inflammation and stabilization of stenotic segments. Ethical considerations included obtaining informed consent from the patient for publication and anonymization of personal details. Data were recorded and maintained in accordance with institutional guidelines.

Results :

The patient demonstrated significant improvement following proper diagnosis and initiation of immunosuppressive therapy. Initial laboratory evaluation revealed markedly elevated ESR (78 mm/hr) and CRP (46 mg/L), with mild normocytic anemia. All tuberculosis-related tests including Mantoux, CBNAAT, sputum AFB, and chest X-ray were negative. Despite receiving empirical anti-tubercular therapy for six weeks, no symptomatic improvement was observed. CT angiography revealed hallmark features of **Takayasu Arteritis**, including circumferential aortic wall thickening, segmental stenosis, and narrowing of the left subclavian and left common carotid arteries. These findings were consistent with Type II TA. Initiation of corticosteroid therapy led to symptomatic improvement within four weeks. ESR reduced to 28 mm/hr and CRP to 12 mg/L. The patient reported increased appetite, decreased fatigue, and complete resolution of fever. Follow-up imaging after three months showed reduction in inflammatory changes and stabilization of arterial narrowing. No complications such as aneurysm formation or severe ischemic events were observed during the follow-up period.

Discussion :

Takayasu Arteritis is frequently misdiagnosed as tuberculosis due to shared constitutional symptoms and elevated inflammatory markers. In TB-endemic regions, clinicians may begin empirical ATT, leading to delayed diagnosis of TA. This case reinforces the importance of considering non-infectious causes when patients fail to respond to TB therapy. Early vascular imaging plays a critical role in differentiating TA from other chronic inflammatory diseases and preventing irreversible arterial damage.

CONCLUSION:

This case highlights Takayasu Arteritis as a rare but important mimic of tuberculosis. Persistent symptoms despite anti-tubercular therapy should prompt further evaluation with vascular imaging. Early diagnosis and timely immunosuppressive therapy can significantly improve

patient outcomes and prevent long-term vascular complications. Increased clinician awareness is essential, especially in TB-endemic regions.

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