WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.453
Volume 13, Issue 13, 1652-1657. Case Study ISSN 2277–7105

CASE STUDY: TAKAYASU'S ARTERITIS IN A MALE PATIENT WITH EMPHASIS ON NON-INVASIVE IMAGING TECHNIQUES

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Article Received on
19 May 2024,

Revised on 10 June 2024,
Accepted on 01 July 2024

DOI: 10.20959/wjpr202413-33140

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ABSTRACT

Takayasu arteritis (TA) is a rare large vessel vasculitis, typically characterized by systemic symptoms such as fever, weight loss, and hypertension. However, it can present with atypical symptoms, as observed in a 34-year-old male patient who experienced intermittent left upper limb pain and dizziness with positional changes. Diagnostic imaging, including PET-CT and ultrasound, revealed hypermetabolic activity and circumferential thickening of the infrarenal abdominal aorta, consistent with modern non-invasive practices. This case underscores TA's diverse clinical presentation and global prevalence, highlighting its occurrence in demographic groups beyond its traditionally recognized patterns. The involvement of the infrarenal abdominal aorta in this patient aligns with observations in Indian males, illustrating the disease's variable nature across populations. The absence of concurrent autoimmune conditions aided in distinguishing TA from other forms of vasculitis, facilitating accurate diagnosis and management. This case emphasizes the importance of considering TA in patients presenting with unusual vascular symptoms, necessitating thorough diagnostic evaluation to guide appropriate treatment strategies.

KEYWORDS: Takayasu's arteritis, Vasculitis, PET-CT, Autoimmune mechanisms, Immunosuppressants, Glucocorticoids, Corticosteroids.

INTRODUCTION

Takayasu's arteritis (TA) is a rare, chronic inflammatory vasculitis that primarily targets large and medium-sized arteries like the aorta and its major branches, including the coronary, carotid, pulmonary, and renal arteries. It is also known as "pulseless disease" due to arterial occlusions leading to weak or absent pulses, TA predominantly affects young women of childbearing age, especially those of East Asian descent. However, it can also occur in men and across diverse age and ethnic groups, typically beginning in the second decade of life with a median diagnosis delay of around 15 months.[1,2]

TA is characterized by a wide range of symptoms that vary significantly depending on the stage of the disease and the specific arteries involved. Early stages often present with nonspecific systemic symptoms such as fever, weight loss, and malaise, while later stages can lead to severe vascular complications including progressive wall fibrosis, lumen stenosis, and aneurysm formation.[3,4] The etiology of TA remains unclear, but it is believed to involve autoimmune mechanisms, with distinct patterns of vascular involvement, clinical manifestations, and prognosis observed across different populations. Despite its rarity, the global prevalence and diverse presentation of TA underscore the importance of awareness and early diagnosis in managing this complex disease.[5,6]

In a 34-year-old male patient, the presentation of intermittent left upper limb pain and dizziness upon positional changes deviates from the common systemic symptoms of TA such as fever, weight loss, and hypertension. Diagnostic imaging, including PET-CT and ultrasound, revealed hypermetabolic activity and circumferential thickening of the infrarenal abdominal aorta, consistent with modern non-invasive diagnostic practices.

This case highlights the global prevalence and diverse presentation of TA, affecting various demographic groups. The patient's infrarenal abdominal aorta involvement aligns with patterns seen in Indian males, reflecting the disease's variability. The absence of other autoimmune conditions aids in differentiating TA from other vasculitis, facilitating accurate diagnosis and management.[7,8]

CASE REPORT

A 34year old male came to the hospital with the chief complaints of occasional pain in the left upper limb since 2months.C/o dizziness on getting up from bending forward position. No h/o headache, blurring of vision, tinnitus, TIA. No c/o pain abdomen, chest pain, SOB,

palpitations. No h/o fever, weight loss. No joint pains. Upon initial assessment, vital signs were within normal limits with blood pressure of 120/70mmHg, Saturation of 98% on room air.

INVESTIGATIONS

CRP-0.62mg/dl, Triglycerides-283mg/dl, VLDL Cholesterol-57mg/dl.

Ultrasound of Whole Abdomen-known case of Takayasu arteritis. Present scan shows Mild wall thickening in the infra renal abdominal aorta as described.

PET-CT Whole body-FDG PET-CT scan shows hypermetabolic segmental circumferential thickening involving the infrarenal abdominal aorta.

TREATMENT

The prescribed standard treatment regimen included an initial dose of 20mg of prednisolone, tapered by 2.5mg weekly, alongside 15mg of methotrexate with 5mg of folic acid, a combination therapy of telmisartan and hydrochlorothiazide, 20mg of atorvastatin, and vitamin D supplements administered for 15 days, with dosages adjusted based on the patient's weight.

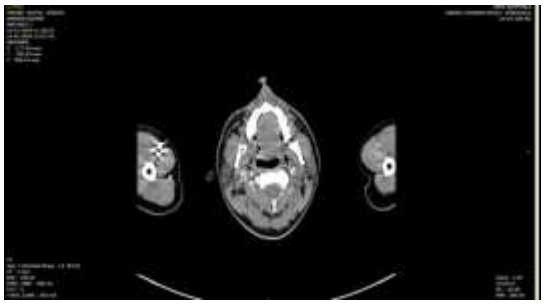

Fig.1

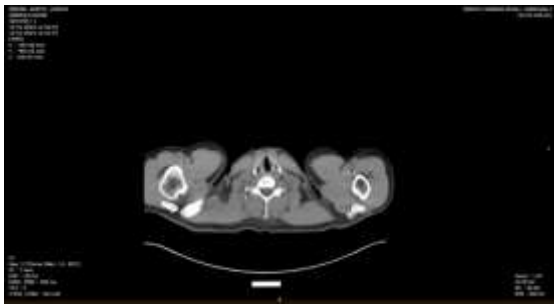

Fig.2

Fig.1- This CT scan image of the cervical spine and adjacent neck structures does not reveal any acute pathological findings.

Fig.2- This CT scan image of the lower thoracic and upper lumbar spine, including adjacent structures, does not reveal any acute pathological findings.

DISCUSSION

The clinical presentation of the 34-year-old male patient with Takayasu's arteritis (TA) underscores the variability in symptom manifestation typical of this disease. His symptoms of intermittent left upper limb pain and dizziness upon positional changes, without systemic symptoms such as headache, visual disturbances, chest pain, fever, weight loss, or joint pains,

deviate from the common systemic symptoms seen in TA, particularly during its early active phase. Systemic symptoms like fever, night sweats, and arthralgia are frequently reported in the literature but were notably absent in this patient. Additionally, the patient's normal blood pressure (120/70 mmHg) contrasts with the majority of TA cases where hypertension is a predominant feature due to renal artery involvement or aortic narrowing.

Laboratory investigations showed elevated triglycerides (283 mg/dL) and VLDL cholesterol (57 mg/dL), with a CRP level of 0.62 mg/dL, suggesting an absence of acute inflammation. This is atypical for TA, where elevated inflammatory markers are usually present during active phases. Diagnostic imaging played a crucial role in the patient's diagnosis. PET-CT imaging indicated hypermetabolic activity and circumferential thickening of the infrarenal abdominal aorta, while ultrasound revealed mild wall thickening. These findings align with modern diagnostic practices that favor non-invasive imaging techniques such as PET-CT and MR angiography (MRA) for detecting early arterial wall inflammation. The use of PET-CT is particularly advantageous for identifying metabolic activity indicative of inflammation, which traditional angiography might miss.[9,10] This diagnostic approach is consistent with current preferences for non-invasive early detection of TA. The case emphasizes the complex pathogenesis of TA, which involves chronic inflammation mediated by CD4+ T cells, cytokines, and macrophages, leading to vascular wall inflammation and granuloma formation. Genetic factors, including associations with HLA-B52 and DR2, also contribute to disease susceptibility, particularly in specific populations such as Japanese patients.[11,12,13]

The patient's management involved corticosteroids as first-line therapy, with immunosuppressants for refractory cases. This aligns with standard TA treatment protocols, which include glucocorticoids and steroid-sparing agents like methotrexate, cyclophosphamide, azathioprine, or mycophenolate mofetil. The absence of surgical interventions indicates that the patient's condition may not have progressed to severe stenotic or occlusive lesions, or that medical management is currently sufficient.[13,14]

The patient's prognosis appears favorable given the absence of severe systemic symptoms and normal blood pressure, consistent with the literature reporting a 5-year survival rate of approximately 94% for adults with TA. Continuous monitoring and appropriate treatment are essential to manage potential disease progression and relapses, underscoring the importance of long-term care in TA management.[15]

Demographically, the global prevalence of TA, predominantly affects young females, particularly of East Asian descent. Studies indicate higher abdominal aorta involvement in Indian males compared to Japanese females, who typically present with aortic arch involvement. The patient's presentation with infrarenal abdominal aorta involvement aligns with patterns seen in Indian males, reflecting ethnic and geographic variations in disease manifestation.[15,16]

CONCLUSION

In conclusion, the 34-year-old male patient's case of Takayasu's arteritis (TA) highlights the disease's diverse presentation and the importance of considering TA in atypical scenarios. Despite the absence of common systemic symptoms, diagnostic imaging revealed characteristic findings of TA, emphasizing the critical role of PET-CT and ultrasound in early detection. The absence of other autoimmune conditions narrows the focus solely on TA, crucial for distinguishing it from other vasculitis such as lupus vasculitis, which primarily affects small vessels. This clinical presentation supports differentiating TA from small vessel vasculitis, aiding in accurate diagnosis and appropriate management. Effective management with corticosteroids follows standard treatment protocols, and the patient's favourable prognosis underscores the benefits of timely diagnosis and intervention. This case underscores the need for awareness of TA's variable presentations and the use of advanced imaging techniques for accurate diagnosis and management.

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