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Case Report

Takayasu arteritis associated with tuberculosis: a case report

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ABSTRACT

Takayasu arteritis, also called pulseless disease, is the chronic inflammation of the vessels, mainly the aorta and large vessels. It mainly affects females more than males with the ratio of 2.15:1 and in the second and third decade of life. Mechanism may be transmural fibrous thickening of the arterial walls. Takayasu's is characterized by granulomatous inflammation of the vessel wall, leading to occlusion of the vessel wall. It is represented with claudication, fever, arthralgia. Clinical features are chest pain, vascular bruits, Hypertension. Investigation is based on angiography and CT scan. Medical treatment prednisolone is the first line agent 1mg/kg/day maximum dose is 60mg/day with gradual tapering as per European league against rheumatism guidelines, methotrexate and azathioprine are for inducing remission of arterial lesions, tumour necrosis factor-α antagonists, anti-IL-6 receptor monoclonal antibody like tocilizumab. Surgical treatment is angioplasty and stenting renal artery stenosis but less invasive and safest method is percutaneous transluminal angioplasty (PTA). Takayasu arteritis might be associated with Tuberculosis, yet, the relationship and mechanism are not clearly understood. Here we report a case of Takayasu arteritis associated with tuberculosis.

Keywords: Pulseless disease, Takayasu Arteritis, Claudication, Tuberculosis, PTA

INTRODUCTION

Takayasu arteritis is a rare and idiopathic disease.[1] It is also called pulseless disease, and occlusive thromboaortopathy.[2] Takayasu arteritis is the chronic inflammation of the vascular system, mainly the aorta and large vessels.[3] Unknown aetiology and the mechanism may be transmural fibrous thickening of arterial walls.[4] Takayasu arteritis affects mainly young females in the second and third decades of life, mainly the aortic arch and its primary branches.[5] Takayasu arteritis is characterised by granulomatous inflammation of the vessel wall, leading to occlusion of the vessel wall. It can be represented with claudication, fever, arthralgia, and weight loss.[6] TA presents with manifestations like arm pain, visual disturbance, dizziness, syncope, and stroke by involvement of the common carotid vertebral arteries in extracranial portions, but the involvement of intracranial arteries is rare.[7] Congestive cardiac failure with hypertension, aortic regurgitation, and dilated cardiomyopathy are clinical features; nearly 96% of the patients have diminished or absent pulses with limb claudication, vascular bruits, 80-94% of patients, hypertension 33-83% of patients.[7-10] The investigation will identify an acute phase response and normocytic, normochromic anemia, but it's based on angiography, which shows occlusion, coarctation, and aneurysmal dilatation, and CT scan detects pulmonary artery and thickening of the vascular wall of the aorta.[11] Medical treatment: initiation of immunosuppressive treatment is crucial.[12] Prednisolone is the first-line agent. 1mg/kg/day maximum dose is 60mg/day with gradual tapering as recommended from European League Against Rheumatism guidelines, some studies suggest methotrexate and azathioprine are effective at inducing

remission and halting progress of arterial lesions.[13,14] Recent studies shows that 84% of patients treated with tumor necrosis factor-α antagonists such as infliximab and etanercept, and the anti-IL-6 receptor monoclonal antibody tocilizumab may control refractory disease.[14] Surgical treatment: revascularization of the affected organs either by surgery or endovascular interventions including balloon angioplasty, stent and stent graft replacement. Endovascular intervention should be based on the site.[15] The least invasive and safest method is PTA.[16] Tuberculosis is a treatable and curable disease.[27] According to a study done by Ying Zhang et. al, most of the patients with TA had latent tuberculosis within their lifetime; the rest of the affected individuals effectively contain their infection.[28] Tuberculosis is a transmissible bacterial infection caused by Mycobacterium tuberculosis, transmitted via the respiratory route that chiefly affects the pulmonary arteritis in patients with TA.[28]

Classification

Table 1: New angiographic classification of Takayasu arteritis.[18]

Types	Vessel involvement
Type I	Branches from the aortic arch
Type IIa	Ascending aorta, aortic arch and its branches
Type IIb	Ascending aorta, aortic arch and its branches, thoracic descending aorta
Type III	Thoracic descending aorta, abdominal aorta, and/or renal arteries
Type IV	Abdominal aorta and/or renal arteries
Type V	Combined features of types iib and iv

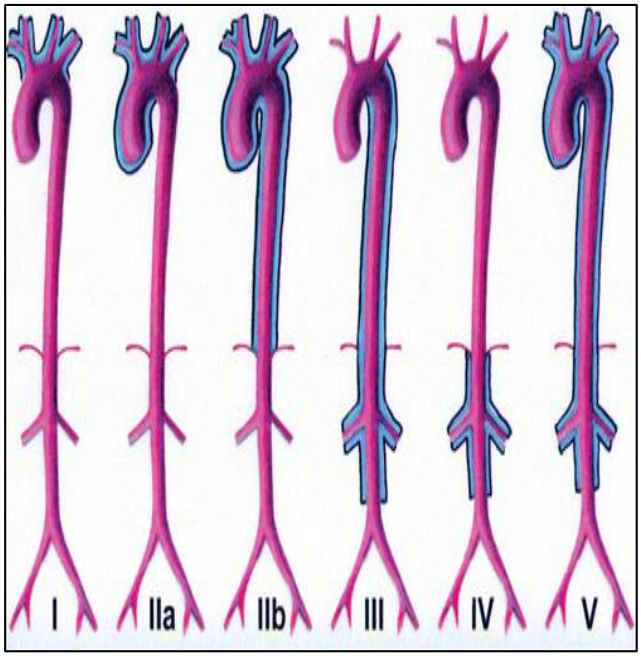

Figure 1: New angiographic classification of Takayasu arteritis according to vessels involved.[17]

Table 2: Ishikawa clinical classification of Takayasu arteritis.[19]

Group	Clinical features
Group I	Uncomplicated disease, with or without pulmonary artery involvement
Group IIa	Mild/moderate single complication together with uncomplicated disease
Group IIb	Severe single complication together with uncomplicated disease
Group III	Two or more complications together with uncomplicated disease

CASE REPORT

A 29-year-old female of Indian origin was admitted to the hospital with complaints of palpitation, chest pain, left upper limb claudication, and paroxysmal nocturnal dyspnoea for the past 2 weeks. Discomfort in breathing is reduced by sitting straight. She is a known case of Hypertension, and Takayasu Arteritis and underwent surgery for renal artery stenosis (PTA) in 2012 and was managed with Tablet Valsartan 50 mg, Tablet Cilnidipine 10 mg, Tablet Carvedilol 3.125 mg, Tablet Torsemide 10 mg, Tablet Ivabradine 5 mg, Tablet Deflazacort 30 mg, Tablet Mycophenolate 360 mg, and Tablet Aspirin and Atorvastatin 150/20 mg in the home. In 2010, her Takayasu arteritis was classified as Type V according to the new angiographic classification. In 2018, 2D Echo was done and the ejection fraction was 45%, then started with Tablet Mycophenolate 360 mg 2 tablets twice daily along with Tablet. Prednisolone 10 mg Once daily. In 2019, 2D Echo was done and found to be dilated cardiomyopathy, moderate AR, and ejection fraction of 35%. In July 2021, a 2D echo showed an ejection fraction of 42%, maximum dilation of ascending aorta 4.6cm, and mild MID AR. In 2021, the patient was admitted to the hospital and underwent PET CT chest which revealed femoral vein myocarditis with the aortic wall, hypermetabolism and 2D echo showed ejection fraction 42%, maximum dilation of ascending aorta 4.6cm, mild MID AR. Patient was discharged with Tab Prednisolone 20 mg once daily tapered after 10 days, antihypertensive, diuretic, and aspirin. In April 2022, CT Angiography was done for the bilateral upper limb and lower limb, which showed the upper limb was normal, lower limb found mild diffuse narrowing of the right CIA with significant wall thickening of 60-65%. The ejection fraction was 42% on 2D Echo global hypokinesis ejection fraction 42%. PET CT was done and showed increased mural FDG uptake in the ascending arch of the aorta with S/O active arteritis, hypermetabolic enhancing nodular lesion in the right breast, and cavitating nodule in the right lower limb (6 mm). The patient had a nodular lesion in the right breast, so to confirm that Breast biopsy and IHC markers were found to be S/O benign proliferative breast disease. Injection Tocilizumab 480mg IV infusion was given with no adverse reactions. Mantoux test was negative but TB Quantiferon gold was positive (3.58) Isoniazid prophylaxis was advised for latent TB infection.

The patient was discharged hemodynamically stable and was advised to take tablet Deflazacort 20mg, tablet Methotrexate 15 mg once a week , tablet folic acid 5 mg 2 tablets once a week , tablet Isoniazid 300 mg Once a day, Tablet Pyridoxine 40 mg half tablet, Tablet Sodium alendronate 70 mg Once a week, tablet Carvedilol 12.5 mg Twice daily, tablet Valsartan 100 mg Twice daily, tablet torsemide and Spironolactone 10mg once a day, Tablet Cilnidipine 10 mg twice daily, tablet aspirin + atorvastatin 75/10 mg Once daily. The patient was advised to come for the next dose of inj. tocilizumab 480 mg IV infusion in June 2022.

DISCUSSION

Takayasu arteritis is a chronic, granulomatous vasculitis, progressive which commonly occurs in the second or third decade of life.[4] The common clinical features are low blood pressure and weak pulses in the upper extremities associated with numbness of the fingers.[20] The patient had hypertension that usually occurs due to renal artery stenosis and poor control of hypertension can be caused by cardiac complications. It was managed by certain antihypertensives and renal artery stenosis PTA. In most of the studies the ratio of female to male is 2.15:1.[21] The most common age groups seen in the third and fourth decades of life. The most common clinical findings were hypertension and absence or weakness of pulses.[21] Common manifestations at disease onset included loss or asymmetry of pulses (57%), limb blood pressure discrepancy (53%), and bruits (53%). 11% of patients were asymptomatic prior to disease diagnosis. Initial angiographic studies showed aortic abnormalities in 79% of patients and frequent involvement of the subclavian (65%) and carotid (43%) arteries.[22] Ninety-three percent of patients attained disease remission of any duration, but 28% sustained remission of at least 6 months' duration after prednisone was tapped to <10 mg daily.[23] Both angioplasty and vascular surgery were initially successful, but recurrent stenosis occurred in 78% of angioplasty and 36% of bypass/reconstruction procedures.[24] Studies have found 65 cases of latent tuberculosis in patients diagnosed with TA.[25] Based on some observational studies, there is a coincidence between TA and latent tuberculosis. Careful interpretation is required for positive purified protein derivatives (PPD), and IGRA tests will influence the immunosuppressive agents and corticosteroids which are used in TA treatment. Additionally, the false-positive reaction to PPD can be due to prior vaccination with BCG.[26]

CONCLUSION

Takayasu arteritis is a pulseless and rare disease. Takayasu arteritis is identified by granulomatous inflammation of the vessel wall, leading to vessel occlusion. It can be represented with claudication, fever, arthralgia, and weight loss. Women are more prone than men. Patient had a history of hypertension and was diagnosed with TB after admission. Upon discharge, the patient was advised to take Tablet Isoniazid 300 mg Once a day. A patient detected latent tuberculosis can be diagnosed with TA.

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