

Takayasu's Arteritis

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Abstract

Takayasu's arteritis is a disease of unknown etiology primarily affecting women aged less than 40 years. It is mainly seen in Asians and Africans. This condition is an aorto-arteritis and involves aorta and its major branches causing segmental narrowing or dilatation. Diminished or absent pulses and hypertension are common. Constitutional symptoms, including fever and weight loss, are often accompanied by elevation of acute phase markers. Diagnosis is made usually in quiescent or "cold phase" of the disease. Long-term complications are due mainly to arterial occlusion and related damage, including limb ischemia and renal failure.

Keywords : Takayasu's Arteritis

INTRODUCTION

Takayasu's arteritis was first discovered in 1908 by a Japanese ophthalmologist, Mikoto Takayasu. It is being known with different names, such as aortic arch syndrome. Pulseless disease and reverse coarctation. It is found worldwide but majority are seen in Asians followed by Africans. In Japan 150 new cases are detected each year compared to USA where 1-3 new cases/million/year are detected. Autopsy studies in Japan showed evidence of Takayasu arteritis in 1 in every 3000 autopsies. Females are usually affected and most are diagnosed below the age of 40. Aetiology is mainly unknown however an auto immune mechanism has been implicated. It is also linked to rheumatic fever, streptococcal infection, rheumatoid arthritis and collagen vascular disease. Certain HLA subtypes; HLA-B*W62 & B*392 are increasingly associated as shown by several studies. Granulomatous arteritis typically found in the media of aorta and its branches marked at "branching points". The lesions are multisegmental (areas of normal wall between affected segments) in distribution. Destruction of elastic lamina and the muscular media can lead to aneurysmal dilatation of the affected vessel and alternatively progressive inflammation, dense scarring and intimal proliferation may lead to narrowing of lumen.

CASE REPORT

A 23 year old female presented to the OPD of our hospital with a recently detected hypertension. She complained of anorexia and on and off fever since last 2-3 months.

On examination she had a blood pressure of 220/140 mmHg on the both arms. All her peripheral pulses were symmetrically palpable with no radio-femoral delay. A harsh bruit over the right neck and abdomen around the peri umbilical region was heard on auscultation. Her routine blood, biochemistry and urine examination were normal. Echocardiography revealed concentric left ventricular hypertrophy and the suprasternal view showed turbulence in the region of proximal brachiocephalic trunk. Non selective root aortography revealed

grossly normal coronaries, arch and descending Aortography revealed 90% stenosis at proximal brachiocephalic artery and a diffuse long segmental narrowing of abdominal aorta involving the origins of both renal arteries. Large collaterals were seen around the vicinity. With these clinical and investigational findings she was diagnosed to have Takayasu's arteritis and was given antihypertensives (excluding ACE inhibitors) and referred to the cardiac surgical team.

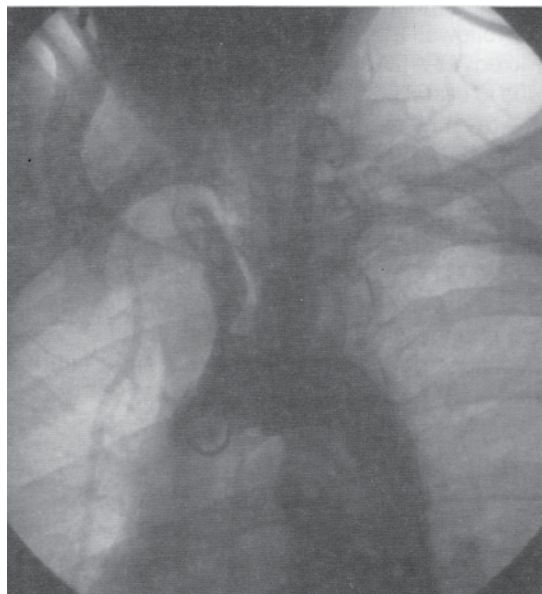


Figure 1: Arch aortogram showing the narrowing of proximal brachiocephalic artery

DISCUSSION

The age of onset of Takayasu's arteritis is 10 to 40 years and the mean age at diagnosis is 29 years. Female to male ratio

is 8:1. Among the diagnosed cases 3/4th are teenagers. Rarely it can be seen infancy. Symptoms are mainly non specific and are common during the early phase of the disease. In more than 50% there is symptoms and signs of inflammation like fever, anorexia, arthralgia; pleuritic pain and fatigue. There might be localized pain and tenderness over the affected arteries. However at the time of diagnosis: 85-96% are in "sclerotic phase" and non of the constitutional symptoms may be present. On physical examination decreased or absent pulsation in arms or legs may be noted. Decreased blood pressure in one or both arms may be noted (with difference of > 10 mmHg systolic pressure). Bruits over the affected vessels may be heard. Hypertension is seen in more than 50%. The disease frequently affects mid or proximal left subclavian artery followed by left common carotid, vertebral, brachiocephalic and mid or proximal right subclavian artery. Abdominal aorta and pulmonary artery are involved in 50%. Aortic regurgitation murmur may be heard. Laboratory investigations are non specific; mild anaemia, reised ESR, CRP, IgG and IgM may be seen. The lesion types are as follows: Stenotic (85%), Dilatative (2%) and Mixed (13%). Aortic regurgitation is present in 1/4th due to dilatation of proximal ascending aorta. Chest x-ray may show dilatation of aorta and mediastinal widening or rim of calcification in the involved arteries. Aortography may reveal irregular intimal surface, post stenotic dilatation or aneurysm and prominent collaterals (due to chronicity of the lesions). CT angiography is 95% sensitive and 100% specific and more sensitive in detecting mural vessel changes. PET is useful to distinguish vessel thickness due to active inflammation or scar for mation.

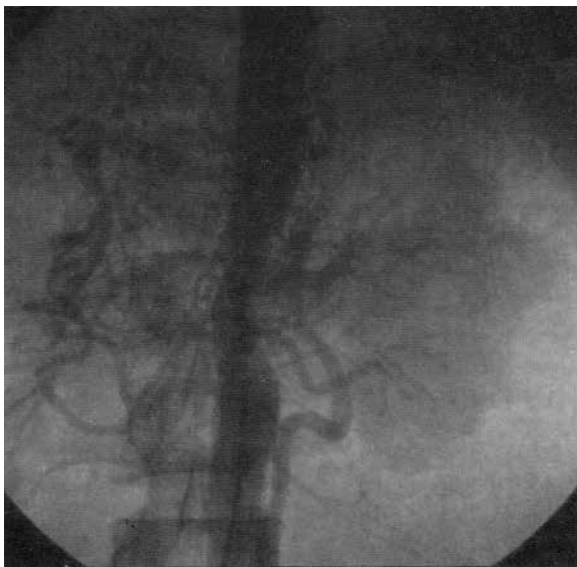


Figure 2: Abdominal Aortogram showing the narrowing of a segment of abdominal aorta

Diagnostic criteria:

American college of Rheumatology (1990) Criteria for the Classification of Takayasu's Disease:

1. Development of symptoms at age less than 40 years
2. Claudication of extremities
3. Decreased pulsation of one or both brachial arteries
4. Blood pressure difference of more than 10 mmHg systolic pressure between arms
5. Bruits over subclavian artery or aorta

6. Aortogram: Focal or segmental narrowing or occlusion of aorta, its primary branches of large arteries in proximal upper or lower extremities which is not due to atherosclerosis or fibro muscular dysplasia

For diagnosis, 3 out of 6 of the above mentioned criteria carry sensitivity of 90.5% and specificity of 97.8%.

Assessment of disease activity:

Evaluation of the disease activity in Takayasu is difficult as there are no tests to confirm that the disease is active and we have to rely on the presence of constitutional symptoms and reised level of acute phase reactants. The National institute of Health (NIH) have defined the active disease as new onset or worsening of at least two of the followings: (i) signs and sypmtoms of vascular inflammation or ischemia (claudication, decreased or absent pulses or blood pressure in the limbs, bruits or carotidynia) (ii) elevated ESR (iii) angiographic abnormalities; and (iv) systemic symptoms (fever, polyarthralgia, polymyalgias)

Differential diagnosis:

In fibromuscular dysplasia the lesions are more focal and not associated with systemic signs and symptoms. Excessive ergotamine intake causes spasm of large blood vessels which is reversible. In Ehlers Danlos Syndrome multiple aneurysms are present and systemic signs of inflammation are absent. In Giant Cell (Temporal) Arteritis the patient is aged more than 50 years, female to male ration is 3:2, Europeans are more affected and external carotid branches are predominantly affected and the disease is self limiting.

Management:

Steroids and immunosuppressants are only effective during the active stage of the disease. Prednisolone 1 mg/kg: Improves constitutional symptoms and halt disease progression, decreases ESR. If it doesn't respond then cyclophosphamide 2 mg/kg/ day or alternatively low dose Methotrexate 0.3 mg/kg/week can be used which increases steroid efficacy and facilitate steroid tapering. Azathioprine in combination with prednisolone can be given. Experiences with anti-tumour necrosis factor alpha (anti-TNF) in difficult cases is limited. Percutaneous transluminal angioplasty or bypass grafts may be considered in late cases when irreversible arterial stenosis has occurred and significant ischemic symptoms are present. In surgical management bypass or reconstruction of multiple aortic or arterial segments are done. Renal artery stenosis is the most common indication for surgery. In interventional treatment angioplasty preferred in suitable lesions but is less likely to be successful in heavily scarred or long lesion.

Prognosis:

Takayasu's arteritis is a chronic disease. The degree of activity over time varies with exacerbations and remissions of the inflammatory proress. The disease may eventually burn out. 15 year survival is 83%. Survival without major complications is 96% and with major complications is 66%. One study has found two major cpredictors of outcome: the incidence of complications (retinopathy, hypertension, aortic regurgitation and aneurysm) and the presence of a progressive course. Death is usually due to CVA, CCF or MI.

CONCLUSION

Takayasu's arteritis continues to be an enigma even after

one century. The exact etiology is still not known, however genetic predisposition of an individual along with autoimmune responses to an unknown factor is believed to be the cause. Detection of active disease remains a challenge. Newer techniques like Intravascular Ultrasound, MRI, PET scan are promising. Immunosuppressive therapy is the treatment during active stage of the disease, while surgery and Percutaneous angioplasty is the treatment of choice in stenotic lesions.

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