BAOJ Cellular & Molecular Cardiology

Mohsin Ahmed, et al., BAOJ Cell Mol Cardio 2016, 2: 1
1: 007

Case Report

Takayasu's Arteritis Associated With Hyperthyroidism in an Elderly Female

Mohsin Ahmed[1], Mohammed Abaye Deen Saleh[2], Pratyay Hasan[3*], Kazi Abul Fazal Ferdous[4], Mohammad Asraful Islam[4], Mohammad Ali[5], Anindita Das[4] and Abdul Wadud Chowdhury[6]

1.Associate Professor, Department of Cardiology, Dhaka Medical College, Dhaka 1000, Bangladesh

2.Registrar, Department of Cardiology, Dhaka Medical College, Dhaka 1000, Bangladesh

3.Post Graduate Student, MD (Cardiology, 1st Part), Department of Cardiology, Sir Salimullah Medical College, Dhaka 1100, Bangladesh

4.Medical Officer, Department of Cardiology, Dhaka Medical College, Dhaka – 1100, Bangladesh

5.MD, Final part student, Department of Cardiology, Dhaka Medical College, Dhaka 1000, Bangladesh

6.Professor, Department of Cardiology, Dhaka Medical College, Dhaka 1000, Bangladesh

Abstract

Takayasu's arteritis is rare, but most commonly seen in Japan, South East Asia, India, and Mexico. Incidence of TA is 2.6/million/year, affects usually female and usually presents in the 2nd or 3rd decade of life. We intend to report a case where a Bangladeshi female presented at an unusual age of 52 years with rather atypical presentations like multiple joint pain and swelling with a very uncommon association of hyperthyroidism. This report could be of benefit to the physicians in the concerning fields should be well aware of such instances where everything does not fit the picture right away, but ultimately the diagnosis becomes evident to a careful eye.

Keywords: Takayasu's arteritis; Hyperthyroidism; Unusual presentation; Cardiology

List of Abbreviations

TA=Takayasu's Arteritis; NSAID=Nonsteroidal Anti-Inflammatory Drugs; DNA=Deoxyribonucleic Acid; ANA=Antinuclear Antibody; ASO = Antistreptolysin O; ACR= American College Of The Rheumatologists; ANCA=Antineutrophilic Cytoplasmic Antibody; APLA; HBsAg= Hepatitis B Surface Antigen, HBc= Hepatitis B Core Antigen; ECG= Electrocardiogram; LV= Left Ventricle; EF= Ejection Fraction; TSH= Thyroid Stimulating Hormone; Anti TPO-Anti Thyroid Per Oxidase; FT3= Free Triiodothyronine; FT4= Free Thyroxine; USG= Ultrasonogram; RIMA= Right Internal Mammary Artery; CT= Computed Tomography. LSA= Left Subclavian Artery; LCCA= Left Common Carotid Artery; RSA= Right Subclavian Artery

Introduction

Takayasu's arteritis (TA), also known as pulseless disease, occlusive thromboaortopathy, and Martorell syndrome, is a chronic inflammatory arteritis of unknown etiology affecting large vessels, predominantly the aorta and its main branches and occasionally the pulmonary and the coronary arteries. It is rare, but most commonly seen in Japan, South East Asia, India, and Mexico. The reported incidence of TA is 2.6/million/year[1].The females are predominantly affected and the usual presentation is in the 2nd or 3rd decade of life. The characteristic presenting features include diminished or absent pulse, vascular bruits, hypertension, retinopathy, aortic regurgitation, neurological features secondary to hypertension and/or ischaemia, including postural dizziness, seizures etc., pulmonary artery involvement and some other symptoms include dyspnoea, headaches, carotodynia, myocardial ischaemia, chest wall pain, and erythema nodosum. Takayasu's arteritis may also mimic other idiopathic inflammatory diseases such as Behçet's syndrome, giant cell arteritis and sarcoidosis or infections (e.g., tuberculosis, syphilis).Hyperthyroidism is rare among the patients with TA but if present may share common genetic[2]or immunological [3] mechanisms. High degree of clinical suspicion is prerequisite of making successful diagnosis and management of two conditions occurring simultaneously. Here, we present such a case of TA with hyperthyroidism.

Case Report

A 52 years old Bangladeshi female presented to the cardiology department of a tertiary hospital with multiple joint pain and neck swelling for 3 months. The joint pain was of symmetrical polyarthritis, also involving the lower back, and was accompanied

***Corresponding author:** Pratyay Hasan, Department of Cardiology, Sir Salimullah Medical College, Dhaka – 1100, Bangladesh, Email: phasan-bd@gmail.com

Sub Date: November 30, 2016, **Acc Date:** December 5, 2016, **Pub Date:** December 5, 2016.

Citation: Mohsin Ahmed, Mohammed Abaye Deen Saleh, Pratyay Hasan, Kazi Abul Fazal Ferdous, Mohammad Asraful Islam, et al. (2016) Takayasu's Arteritis Associated With Hyperthyroidism in an Elderly Female. BAOJ Cell Mol Cardio 2: 007.

by morning stiffness and restriction of daily activities. During the course of illness, she developed a swelling in front of neck and had difficulty in swallowing, excessive sweating, heat intolerance, weight loss without loss of appetite, alopecia and tremor. On examination, she was found to be pale, her left radial pulse was not palpable while the right radial pulse was feeble. The posterior tibial and arteriadorsalispedis pulses were normally palpable. Her blood pressure was 90/60 mmHg in right upper arm, could not be recorded in left upper arm, and was 120/80mm of Hg in both lower limbs. There was radio-radial and radio-femoral delay but no femoro-femoral delay. Also, carotid bruit was heard in both sides of neck but renal bruit was absent. The thyroid gland was enlarged, firm and nodular. Both knee, elbow and wrist joints were swollen and tender. Investigations revealed: hemoglobin 11.6g/dl, erythrocyte sedimentation rate 36mm in 1sthour, serum creatinine 0.79 mg/dl, and serum electrolytes normal. Also normal were the liver function tests and the lipid profile. Anti-nuclear antibody (ANA) level was elevated to 26 U/mL(<10.0 U/mL), showing speckled pattern, anti-streptolysin O (ASO)titer was normal, rheumatoid factor, anti-ds DNA,anti-neutrophil cytoplasmic antibody(ANCA), antiphospholipid antibodies (APLA), HBsAg and anti-HBc were negative. The Mantoux test was negative. The chest X-ray and ECG were normal. 2D echocardiography was normal with the left ventricular ejection fraction being 69%. The thyroid function tests revealed: TSH 0.014 mIU/L, free T3 14.7 pg/ml, free T4 4.15ng/dl. USG of thyroid gland demonstrated multi-nodular goiter and thyroid scintigraphy showed thyromegaly with high radioiodine uptake. The anti-thyroid peroxidase antibodies (anti-TPO) and anti-thyroglobulin antibody levels were normal. Duplex study revealed high-grade lesion in right sub clavian artery, no pulsatile flow in the left subclavian artery, reduced pulsatile flow in the rest of the upper limb arteries, and atherosclerotic changes in both carotid arterial systems. Coronary angiography showed normal epicardial coronary arteries. Peripheral angiography demonstrated total occlusion of left subclavian artery just after left vertebral artery, 99% osteo-proximal stenosis of left common carotid artery and 90% stenosis in right subclavian artery distal to the right internal mammary artery (RIMA). CT angiography showed moderate osteo-proximal narrowing in the left common carotid artery (Figure 1 & 2) and severe (>95%) narrowing in the proximal left subclavian artery. Fundoscopic examination revealed no abnormality (Figure 3). The patient was treated conservatively with oral prednisolone 40mg daily, carbimazol 5mg twice daily, cilostazol 100 mg twice daily, propranolol 20mg twice daily and aspirin 75mg daily. We followed up the patient after 1month; investigations revealed Hb 12.5g/dl, ESR 50mm in 1sthour, TSH 3.80 mIU/L, FT34.57pmol/l, FT46.26pmol/l. We reduced the dose of carbimazol and the patient was again followed up after 2 months. In that visit, there was significant improvement except moon-like face and abdominal distention. On examination, pulses were present in both sides of upper limbs with radio-radial delay and reduced volume on left side. Blood pressures were 100/60 mmHg in right and 90/60mmHg in left arm. We suspected drug-induced Cushing syndrome but serum cortisol level and dexamethasone suppression test were normal. We again repeated an aortogram which showed reduced stenosis of left subclavian artery from 100% to 30% but left common carotid and left subclavian artery stenoses remained as before (Figure 1 & 2).

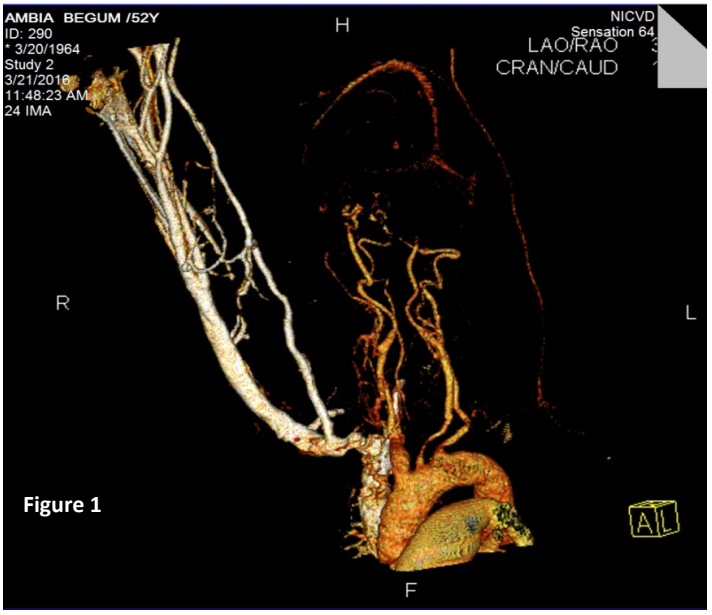

Figure 1

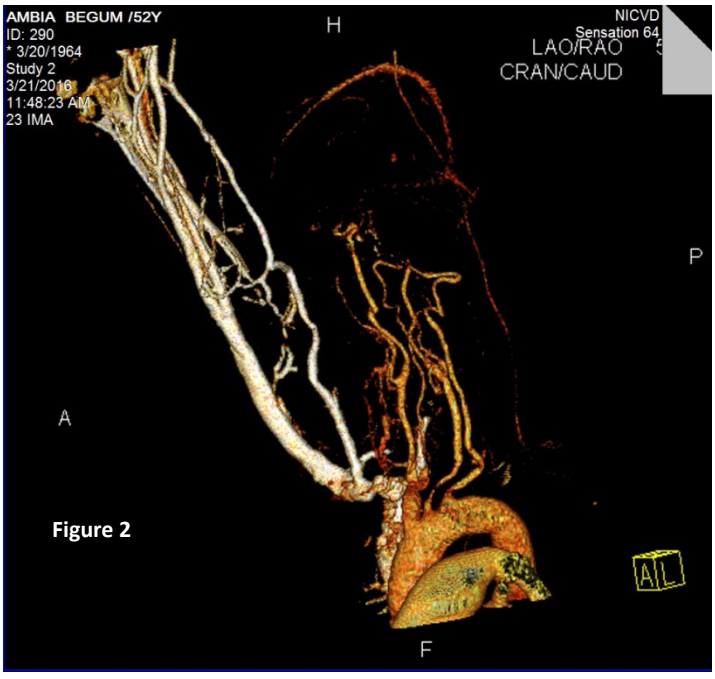

Figure 2

Figure 1 and 2 showing CT angiogram featuring arterial changes.

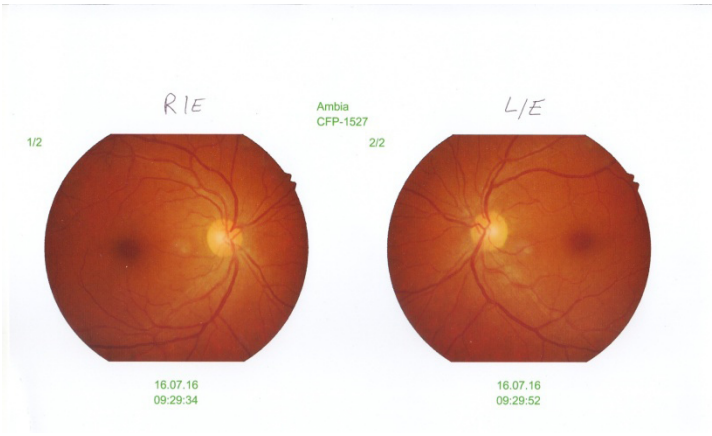

Figure 3: showing color fundus photograph showing normal retinal vessels.

Discussion

In 1990, the American College of Rheumatology (ACR) suggested a set of 6criteria for the diagnosis of Takayasu's arteritis:[4]

1. Age at disease onset <40 years: Development of symptoms or findings related to Takayasu arteritis at age <40 years

2. Claudication of extremities: Development and worsening of fatigue and discomfort in muscles of 1 or more extremities while in use, especially the upper extremities

3. Decreased brachial artery pulse: Decreased pulsation of 1 or both brachial arteries

4. Blood pressure difference >10 mmHg: Difference of >10 mm Hg in systolic blood pressure between arms

5. Bruit over subclavian arteries or aorta: Bruit audible on auscultation over 1 or both subclavian arteries or abdominal aorta

6. Arteriogram abnormality: Arteriographic narrowing or occlusion of the entire aorta, its primary branches, or large arteries in the proximal upper or lower extremities, not caused by arteriosclerosis, fibro muscular dysplasia, or similar causes; changes usually focal or segmental

The presence of 3 of these 6 criteria is required for the diagnosis of TA [4]. Our patient has fulfilled 5 out of those 6 criteria along with features of hyperthyroidism.

Takayasu's arteritisis a disease of young females with probable genetic and infectious contribution to the etiology. [5] reported a 23 years old patient but our case was 52years old, which is the only feature deviating from ACR criteria, and which makes our case more unusual as Takayasu's arteritis is very rare after the age of 40 [6,7]. In a study of 280 patients, 217 with giant cell arteritis and 63 with Takayasu arteritis identified through the ACR vacuities criteria databank, they found that age of 40 years at disease onset was the single-most discriminatory factor[8]. But in our case the patient is more aged than the expected range, yet it matches 5 out of 6 criteria proposed by ACR, where only matching of 3 would suffice to establish a diagnosis of Takayasu arteritis[4].Very recently Takayasu's arteritis has been reported by some researchers in the elderly, as well.[9-11]Elevated level of VCAM-1 in Takayasu's arteritis is reported by some researchers, [12] although it could not be investigated in our case due to lack of adequate laboratory facility.

Very few researchers have reported Takayasu's arteritis with hyperthyroidism till to date [2,5,13]. Ashraf et al. reported the case with anemia, elevated ESR and CRP, decreased TSH, normal anti-TPO antibody but elevated anti-thyroglobulin antibody, aortic regurgitation with global hypokinesia in echocardiography and involvement of bilateral subclavian, left vertebral, celiac and superior mesenteric arteries on Multi-detector computed tomography (MDCT)[5]. But in our case ESR and CRP were not raised with normal anti-TPO and anti-thyroglobulin antibody level and normal echo findings and involvement of left common carotid and both subclavian arteries. Only decreased TSH was similar to it. MikitoTakayasu, the Japanese ophthalmologist in 1908 described as a wreathlike appearance of retinal vessels with the absence of radial pulse in a case of TA [3]. But our patient had normal retinal vessels.[2] published 2 case reports of hyperthyroidism in patients with Crohn's disease and Takayasu's arteritis. They tried to explain the possible association of these 3 diseases of genetic factors and disease-related iodine deficiency, both involving the Nuclear Factor kappaB pathway [13]. Reported a case of isolated pulmonary Takayasu's arteritis which was combined with pulmonary thromboembolism and hyperthyroidism in Korea. [14]. reported high prevalence of other inflammatory diseases in patients with Takayasu's arteritis and gave opinion that Takayasu's arteritis may be associated with abnormality of the immune system activated by other inflammatory diseases, such as infection, autoimmune diseases, or inflammatory diseases of unknown origin.[14]

As Bangladesh has made commendable progress in improving the iodine status in over the past two to three decades by program of fortification of salt with iodine, [15] less and less of iodine deficiency cases are encountered in clinical practice. Moreover, this patient, came from Dhaka City Metropolitan area, where iodine deficiency has never been a problem, contrary to the previously affected zone in Northern Bangladesh. In this case, presence of one autoimmune disease raises the possibility that other autoimmune diseases might also be present. Although the usual anti-thyroid antibodies were negative, we hold suspicion that autoimmune pathology probably caused the hyperthyroidism.

Another unusual feature of the present case is that the patient was originally presented with complaints of multiple joint pain and swellings, which directed the attending physicians to think of other diagnoses involving musculoskeletal systems or connective tissue diseases. But after thorough physical examination, the true nature of the disease was revealed. The involvement of joints is very uncommon and very rarely reported for Takayasu's arteritis. Some researchers have reported very rare coexistence of rheumatoid arthritis and Takayasu's arteritis[10,11,16–18], some of which were late in onset like ours [10,11]. But our case does not meet the ACR criteria for rheumatoid arthritis[19,20]. In this case no other

explanation or pathological process could be detected even after thorough investigations.

Conclusion

The unusual age and type of presentation together with rare association with hyperthyroidism make this case an uncommon example meriting further academic discussion. Again, the instances of Takayasu's arteritis are heard only very rarely in this region or ethnicity. Physicians in the concerning fields should be well aware of such instances where everything does not fit the picture right away, but ultimately the diagnosis becomes evident to a careful eye.

References

1. Hall S, Barr W, Lie JT, Stanson AW, Kazmier FJ, et al. (1985) Takayasu arteritis. A study of 32 North American patients. Medicine (Baltimore) 64(2): 89-99.
2. Kettaneh A, Prevot S, Biaggi A, Stirnemann J, Fain O, et al. (2003) Hyperthyroidism in two patients with Crohn disease and Takayasu arteritis. Scand J Gastroenterol 38(8): 901–3.
3. Johnston SL, Lock RJ, Gompels MM (2002) Takayasu arteritis: a review. J Clin Pathol 55(7): 481–6.
4. Arend WP, Michel BA, Bloch DA, Hunder GG, Calabrese LH, et al. (1990) The American College of Rheumatology 1990 criteria for the classification of Takayasu arteritis. Arthritis Rheum 33(8): 1129–34.
5. Ashraf M, M.K S, Arunachalam R, Sequeira A, H.K V, et al. (2011) A Rare Case of Takayasu's Arteritis with Hyperthyroidism. J Clin Diagn Res JCDR 5(4): 835–7.
6. Rubin GD, Rofsky NM (2012) CT and MR Angiography: Comprehensive Vascular Assessment. Lippincott Williams & Wilkins.
7. Parvin SD (2005) Rare Vascular Disorders: A practical guide for the vascular specialist. tfm Publishing Limited .
8. Michel BA, Arend WP, Hunder GG (1996) Clinical differentiation between giant cell (temporal) arteritis and Takayasu's arteritis. J Rheumatol23(1): 106-11.
9. Hayakawa I, Kunimatsu J, Watanabe R, Kubota K, Yoshizawa A, et al. (2012) Value of carotid artery tenderness for the early diagnosis of Takayasu arteritis. Intern Med Tokyo Jpn 51(24): 3431-4.
10. Verweij KE, van Well AME, vd Sluijs JW, Dees A, Verweij KE, van Well AME, et al. (2012) Late Onset Takayasu Arteritis and Rheumatoid Arthritis, Late Onset Takayasu Arteritis and Rheumatoid Arthritis. Case Rep Med Case Rep Med 2012: Doi:10.1155/2012/523218.
11. Nakabayashi K, Nitadori T, Kamiya Y, Nagasawa T (1998) Atypical Takayasu arteritis: late onset and arthritic manifestations: report of two cases. Int J Cardiol 66 (1): 221-227.
12. Tripathy NK, Chandran V, Garg NK, Sinha N, Nityanand S, et al. (2008) Soluble endothelial cell adhesion molecules and their relationship to disease activity in Takayasu's arteritis. J Rheumatol 35(9): 1842-1845.
13. Uhm JS, Kwon JH, Kim TW, Ji JS, Kim JW, et al. (2004) A Case of Isolated Pulmonary Takayasu's Arteritis Combined with Pulmonary Thromboembolism and Hyperthyroidism. Tuberc Respir Dis 57(2): 188-192. Doi:10.4046/trd.2004.57.2.188.
14. Ohta Y, Ohya Y, Fujii K, Tsuchihashi T, Sato K, et al. (2003) Inflammatory diseases associated with Takayasu's arteritis. Angiology 54(3): 339-44.
15. Yusuf HK, Rahman AM, Chowdhury FP, Mohiduzzaman M, Banu CP, et al. (2008) Iodine deficiency disorders in Bangladesh, 2004-05: ten years of iodized salt intervention brings remarkable achievement in lowering goitre and iodine deficiency among children and women. Asia Pac J Clin Nutr17(4): 620-628.
16. Falicov Re, Cooney Df. (1964) Takayasu's arteritis and rheumatoid arthritis: a case report. Arch Intern Med 114: 594-600.
17. Kim H, Min IS, Yoo JE, Ju Y, Song PH, et al. (2014) Coexisting Rheumatoid Arthritis and Takayasu's Arteritis: a Case Report and Review of the Literature. J Rheum Dis 21: 331. Doi:10.4078/jrd.2014.21.6.331.
18. Korkmaz C, Zubaroğlu İ, Kaya T, Akay OM.(2001) Takayasu's arteritis associated with rheumatoid arthritis: a case report and review of the literature. Rheumatology 40(12): 1420-1422. Doi:10.1093/rheumatology/40.12.1420.
19. Aletaha D, Neogi T, Silman AJ, Funovits J, Felson DT, et al. (2010) 2010 Rheumatoid arthritis classification criteria: an American College of Rheumatology/European League Against Rheumatism collaborative initiative. Ann Rheum Dis 69: 1580-1588. Doi:10.1136/ard.2010.138461.
20. Correction. Ann Rheum Dis (2010) 69(9): 1892–1892. Doi:10.1136/ard.2010.138461corr1.