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A MISSING PULSE LEADING TO THE DIAGNOSIS OF TAKAYASU ARTERITIS WITH RENOVASCULAR AND CEREBROVASCULAR INVOLVEMENT IN A YOUNG WOMAN

General Medicine

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ABSTRACT

Takayasu arteritis (TA) is a chronic granulomatous large-vessel vasculitis predominantly affecting young women and involving the aorta and its major branches. Diagnosis is frequently delayed because constitutional symptoms often precede overt vascular manifestations. We report a 25-year-old woman who presented with generalised weakness of two months duration. One year prior, she had experienced a transient episode of right-sided limb weakness lasting approximately one hour, suggestive of a transient ischaemic attack. Physicalexamination revealed absent pulses in the left upper limb and marked inter-limb blood pressure discrepancy. Laboratory evaluation demonstrated anaemia and elevated inflammatory markers-erythrocyte sedimentation rate (ESR) of 80 mm/hour and C-reactive protein (CRP) of 12.88 mg/ L-consistent with active disease by NIH activity criteria. CT aortography demonstrated circumferential mural thickening involving the ascending aorta, aortic arch, descending thoracic aorta, abdominal aorta, brachiocephalic trunk, bilateral common carotid arteries and left subclavian artery, with significant ostial stenosis of the left renal artery. Arterial Doppler demonstrated monophasic waveforms from the axillary artery distally. Magnetic resonance angiography revealed bilateral carotid wall thickening with terminal internal carotid and middle cerebral artery involvement. The patient fulfilled the 2022 ACR/EULAR classification criteria with a score of 8 points and was classified as Numano Type V disease. She was treated with pulse methylprednisolone followed by oral prednisolone, azathioprine as a steroid-sparing agent, and telmisartan 40 mg once daily for blood pressure control. This case underscores the diagnostic value of meticulous bedside vascular examination and the importance of multimodality imaging in establishing the extent of disease.

KEYWORDS

Takayasu arteritis; pulseless disease; renovascular hypertension; transient ischaemic attack.

INTRODUCTION

Takayasu arteritis (TA) is a chronic granulomatous inflammatory vasculitis affecting the aorta and its major branches. The disease predominantly affects young women during the second andthird decades of life and is more frequently reported in Asian populations. Progressive inflammation results in arterial wall thickening, stenosis, occlusion and occasionally aneurysm formation. Clinical manifestations vary according to the vessels involved and may range from constitutional symptoms to severe ischemic complications involving the brain, kidneys and extremities.

The diagnosis of Takayasu arteritis remains challenging because the initial inflammatory phase is often characterized by nonspecific symptoms such as malaise, fatigue, weight loss and fever. Consequently, diagnosis is frequently delayed until vascular manifestations become clinically apparent. Careful physical examination, particularly assessment of peripheral pulses and blood pressure in all limbs, remains a valuable diagnostic tool. We report a young woman in whom recognition of an absent upper limb pulse led to the diagnosis of extensive Takayasu arteritis with renovascular and cerebrovascular involvement.

CASE REPORT

A 25-year-old woman presented to our department with complaints of generalized weakness for two months. The weakness was insidious in onset and progressively increased over time. She also reported decreased appetite and occasional episodes of vomiting. There was no history of fever, cough, chest pain, dyspnea, abdominal pain or significant weight loss.

One year before presentation, the patient had developed sudden onset weakness involving the right upper and lower limbs. The episode lasted approximately one hour and resolved completely without residual neurological deficit. Magnetic resonance imaging of the brain performed at thattime was reportedly normal and no vascular evaluation was undertaken. There was no history of diabetes mellitus, connective tissue disease, tuberculosis or prior vascular intervention. Family history was non-contributory.

On examination, the patient was conscious, oriented and afebrile. Pulses in the left upper limb were absent. Pulses in the right upper limb and both lower limbs were palpable. Blood pressure was 180/100 mmHg in the right upper limb and 154/90–160/100 mmHg in both lower limbs; it was not recordable in the left upper limb, confirming significant inter-limb discrepancy.

Cardiovascular, respiratory and abdominal examinations were otherwise unremarkable. Laboratory investigations revealed hemoglobin of 9.5 g/dL (reference: 12.0–16.0 g/dL), total leukocyte count of 6,800/mm³ (4,000–11,000/mm³) and platelet count of 300,000/mm³ (150,000– 400,000/mm³). Inflammatory markers were markedly elevated: erythrocyte sedimentation rate 80 mm/hour (reference <20 mm/hour) and C-reactive protein 12.88 mg/L (reference <5.0 mg/L), meeting NIH criteria for active disease. Blood urea (12 mg/dL) and serum creatinine (0.7 mg/dL) were within normal limits, indicating preserved renal function.

Two-dimensional echocardiography demonstrated normal cardiac chambers, normal valvular morphology and preserved left ventricular systolic function with an ejection fraction of 55%.

CT aortography revealed circumferential mural thickening involving the ascending aorta and aortic arch (Figure 1), extending into the descending thoracic aorta and abdominal aorta (Figure2). Similar mural thickening was noted in the brachiocephalic trunk, bilateral common carotid arteries and left subclavian artery. Significant ostial stenosis of the left renal artery was identified with associated reduction in left renal size (Figure 3).

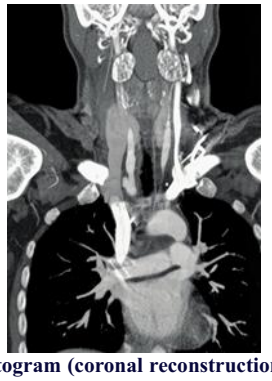

Figure 1. CT aortogram (coronal reconstruction) demonstrating circumferential mural thickening of the ascending aorta, aortic arch and great vessels.

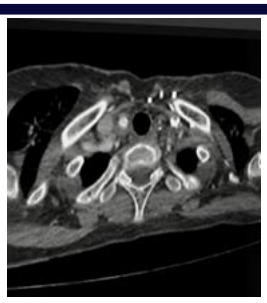

Figure 2. CT aortogram (axial section at the level of the aortic arch) showing circumferential mural thickening consistent with active arteritis.

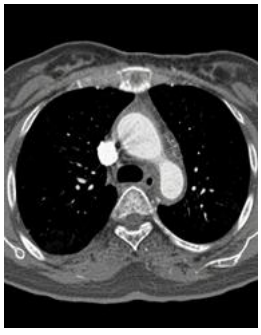

Figure 3. Axial contrast enhanced CT angiography showing concentric mural thickening of aortic arch and proximal descending thoracic aorta

Arterial Doppler of the left upper limb demonstrated diffuse reduction in arterial calibre with monophasic flow extending from the axillary artery through the brachial artery into the radial and ulnar arteries, consistent with significant proximal obstructive disease (Table 1).

Table 1. Bilateral Upper Limb Arterial Doppler Findings

Upper Limb Artery	Right (cm/s)	Right Waveform	Left (cm/s)	Left Waveform
Subclavian Artery	37	Triphasic	20	Monophasic
Axillary Artery	70	Triphasic	40	Monophasic
Brachial Artery	43	Triphasic	24	Monophasic
Radial Artery	35	Triphasic	9	Monophasic
Ulnar Artery	15	Triphasic	17	Monophasic

Magnetic resonance angiography of the neck demonstrated diffuse wall thickening involving both common carotid arteries, more pronounced on the left (Figure 4). Further imaging revealed bilateral common carotid narrowing with irregular luminal contour (Figure 5). Subtle mural thickening involving the terminal internal carotid arteries and middle cerebral arteries bilaterally was also noted (Figure 6). No intracranial aneurysm was identified.

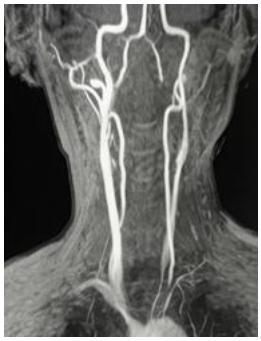

Figure 4. MR angiography showing bilateral common carotid artery stenosis(left greater than right) with extension into proximal Internal carotid Artery

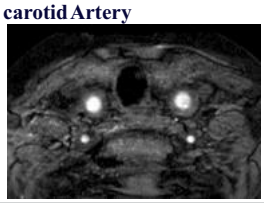

Figure 5. MR angiography showing bilateral common carotid artery involvement with irregular luminal narrowing and mural thickening.

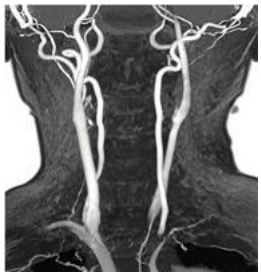

Figure 6. Coronal MR angiogram showing bilateral carotid artery involvement with luminal irregularity and narrowing. greater on left side, extending deeper into the intracranial circulation.

Differential diagnoses considered included fibromuscular dysplasia, giant cell arteritis, Behcet disease, atherosclerotic large-vessel disease and other systemic vasculitides. The patient's young age, elevated inflammatory markers, pulse deficit and characteristic angiographic findings strongly favoured Takayasu arteritis.

The patient fulfilled the 2022 American College of Rheumatology/ European Alliance of Associations for Rheumatology (ACR/EULAR) classification criteria with a total score of 8 points, well above the required threshold of 5 (Table 2).

Table 2. 2022 ACR/EULAR Classification Criteria for Takayasu Arteritis

Criterion	Points Awarded
Age ≤60 years at diagnosis	1
Upper extremity pulse deficit	2
Inter-limb blood pressure discrepancy	1
Carotid artery involvement on imaging	2
Aortic involvement on imaging	2
Total Score	**8**

A score of ≥5 points is required for classification as Takayasu arteritis.

Based on angiographic findings, the disease was classified as Numano Type V Takayasu arteritis due to combined involvement of the aortic arch branches, thoracic aorta, abdominal aorta and renal artery. Histopathological confirmation was not pursued as the affected vessels were large deep vessels not amenable to safe biopsy, and the radiological findings were considered diagnostic.The patient received intravenous methylprednisolone 1 g daily for three consecutive days followed by oral prednisolone 40 mg daily. Azathioprine 50 mg daily was initiated as a steroid- sparing immunosuppressive agent. Antihypertensive therapy was optimized with telmisartan 40 mg once daily. Patient was prescribed Ecosprin-AV 75/10 OD for prevention of recurrence of TIA. The patient was discharged in stable condition with regular follow-up advice after 7 days.

DISCUSSION

Takayasu arteritis is an uncommon but important cause of large-vessel vasculitis among young women, in whom delayed diagnosis is common because constitutional symptoms frequently precede vascular manifestations. In the present case, recognition of absent left upper limb pulses and marked blood pressure discrepancy immediately prompted further imaging, underscoring the indispensable role of careful bedside vascular examination.

Neurological manifestations occur in approximately 10–20% of patients and include transient ischemic attacks, ischemic stroke, syncope and visual disturbances. The transient right-sided weakness one year before diagnosis likely represented a cerebrovascular ischemic event; earlier vascular evaluation at that point may have prevented progression to extensive disease.

Renal artery involvement, reported in approximately one-third of patients, is a major cause of secondary hypertension. Despite preserved renal function, significant left renal artery stenosis with ipsilateral renal atrophy was identified, highlighting the importance of renovascular evaluation in young hypertensive patients.Multimodality imaging-CT aortography, Doppler ultrasonography and MR angiography-collectively delineated the full extent of aortic, branch

vessel and cerebrovascular disease, establishing the diagnosis without histopathological confirmation. The Numano Type V classification reflects combined aortic arch and thoracoabdominal involvement, confirmed as active disease by NIH criteria. High-dose glucocorticoids remain first-line therapy, with azathioprine, methotrexate or mycophenolate mofetil employed as steroid-sparing agents to reduce relapse risk and cumulative corticosteroid exposure.

CONCLUSION

Takayasu arteritis should be considered in young women presenting with unexplained hypertension, pulse deficits or transient neurological symptoms. Careful vascular examination remains an invaluable bedside diagnostic tool. In the present case, recognition of an absent upper limb pulse led to the diagnosis of extensive Takayasu arteritis with renovascular and cerebrovascular involvement. Early diagnosis and prompt initiation of immunosuppressive therapy are critical for preventing irreversible vascular complications.

LEARNING POINTS

- Pulse examination remains an essential bedside investigation in young hypertensive patients.
- Takayasu arteritis should be suspected in young women with pulse deficits and inter-limb blood pressure discrepancies.
- Renal artery stenosis may cause severe hypertension despite preserved renal function.
- Intracranial vessel involvement should be considered in patients presenting with transient neurological symptoms.
- Multimodality imaging can establish the diagnosis of Takayasu arteritis when biopsy is impractical.

DECLARATIONS

Patient Consent: Written informed consent was obtained from the patient for publication of this case report and accompanying images. All identifying information has been removed to preserve confidentiality.

Ethical Approval: Ethical approval was not required for a single-patient case report as per institutional policy.

Reporting Guideline: This case report has been prepared in accordance with the CARE reporting guidelines.

Conflict of Interest: The authors declare no conflict of interest.

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