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Ischemic stroke revealing takayasu's arteritis

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Abstract
Takayasu's arteritis (TA) is a granulomatous vasculitis of unknown etiology that primarily affects the aorta and its major branches, mainly in young women. Although neurological manifestations are uncommon during the initial phase, the occurrence of acute stroke as the initial presentation in patients with Takayasu's arteritis is rarely reported.
We report the case of a 26-year-old woman admitted for an inaugural ischemic stroke. Clinical examination and vascular investigations revealed signs suggestive of Takayasu's disease, allowing for an early diagnosis. The patient was started on systemic corticosteroid therapy combined with an antiplatelet agent, resulting in a favorable clinical outcome.
This case highlights the necessity of considering Takayasu's disease in the presence of an unexplained ischemic stroke in young patients, in order to ensure early and appropriate management, thereby reducing disease progression, morbidity, and associated mortality rates.

Keywords: Ischemic stroke, vasculitis, takayasu's arteritis

Introduction
Takayasu's arteritis (TA) is a chronic, nonspecific inflammatory panarteritis that predominantly affects young women, hence its nickname "the disease of pulseless women." It primarily involves the aorta, its major branches, and visceral arteries. Neurological involvement is common in this pathology, although it is rarely the initial manifestation. Among its neurological presentations, stroke may occur, especially in young individuals.
We report the case of a young female patient who presented with a sudden-onset, established ischemic stroke (IS), which led to the diagnosis of Takayasu's arteritis.

Case report
This case concerns a 26-year-old woman with no significant medical history, no cardiovascular risk factors, and no contraceptive use. She is a gravida 2, para 2 (G2 P2), with two living children. The patient presented to the emergency department with a sudden onset of right-sided hemiparesis, associated with speech impairment and facial asymmetry. Neurological examination revealed right-sided hemiplegia with facial involvement and Broca's aphasia. Cardiovascular examination showed a left carotid bruit, a blood pressure asymmetry of more than 20 mmHg, and the absence of the right radial pulse. The remainder of the physical examination was unremarkable.
In brain imaging, the CT scan revealed a well-defined hypodensity in the left anterior and middle cerebral vascular territories, suggestive of an established ischemic stroke (Fig 1).

As part of the etiological workup for ischemic stroke in a young patient
The biological workup revealed a very mild inflammatory syndrome with an erythrocyte sedimentation rate (ESR) of 95 mm in the first hour and a C-reactive protein (CRP) level of 30 mg/L. The complete blood count, activated partial thromboplastin time (aPTT), and blood ionogram were normal. The thyroid and metabolic workups showed no abnormalities.

The immunological workup
Tests for antinuclear antibodies (ANA), anti-double-stranded DNA (anti-dsDNA), anti-SSA, anti-SSB, antineutrophil cytoplasmic antibodies (ANCA), and antiphospholipid antibodies were all negative.
Syphilis serology was also negative.

Cardiac investigations
The electrocardiogram (ECG) and transthoracic echocardiogram showed no abnormalities.

Vascular imaging
An ultrasound Doppler of the supra-aortic trunks (SAT) followed by a Computed Tomography angiography (CTA) revealed a thrombosis of the left common carotid artery, associated with parietal thickening (Fig 2).

The Fiessinger score was calculated at 15.
Based on these findings, the diagnosis of Takayasu's arteritis complicated by ischemic stroke was confirmed. The lesion workup for the disease, including a thoraco-abdominal angioscan, revealed a 60% stenosis of the brachiocephalic trunk.
Therefore, the patient was started on systemic corticosteroid therapy at a dose of 1 mg/kg/day, along with an antiplatelet agent. Her clinical condition improved progressively, with a recovery of walking ability and a notable improvement in speech disturbances

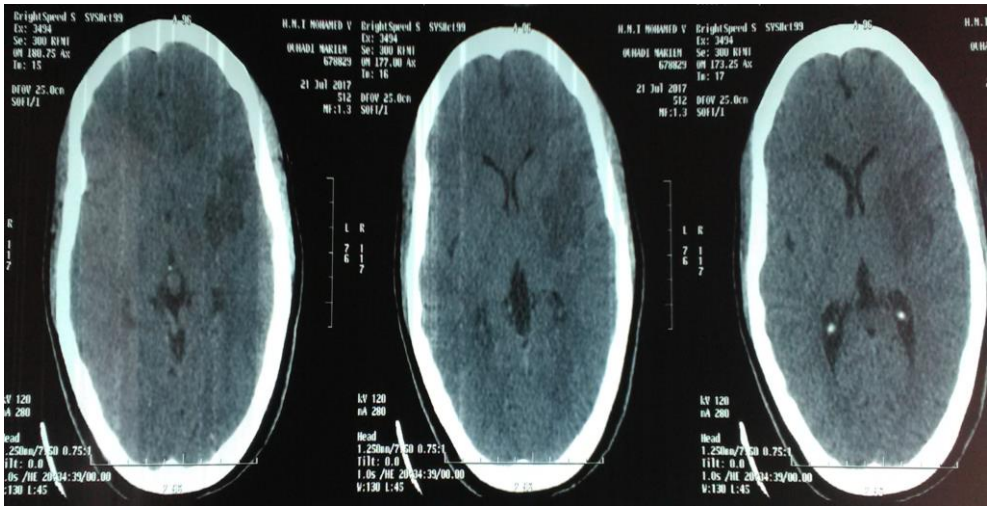

Fig 1: Brain CT scan in axial slice showing a well-defined hypodense area in the left anterior and middle vascular territories, consistent with an established ischemic stroke

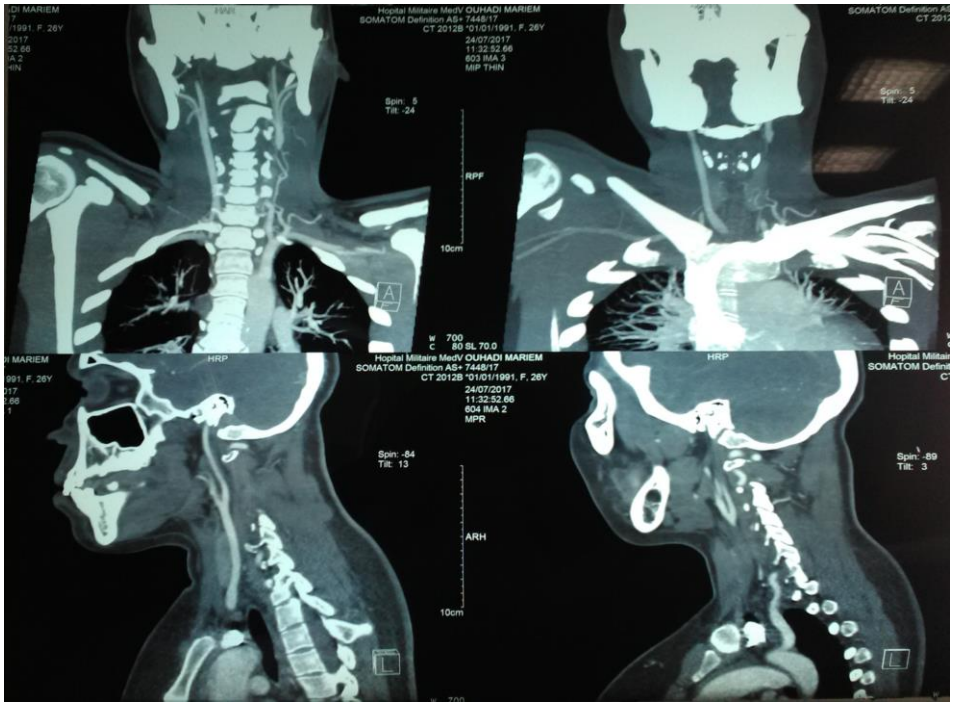

Fig 2: CTA of the supra-aortic trunks showing thrombosis of the left common carotid artery with wall thickening.

Discussion

Takayasu's ateritis is a rare autoimmune vasculitis of unknown etiology, primarily affecting young women of Mediterranean and Asian descent. It classically progresses in two phases: a pre-occlusive phase characterized by extra-vascular symptoms such as fever, myalgias, and arthralgias, followed by an occlusive phase marked by vascular manifestations. However, these two phases often overlap. Vascular manifestations result from chronic inflammation that predominantly affects large arterial trunks, particularly the supra-aortic trunks (SAT), the aorta, and the visceral arteries [1].

The pathogenesis of the disease remains poorly understood, although several hypotheses have been proposed, including immune, infectious (such as tuberculosis), and allergic origins [2–3].

Although cardiovascular involvement is most often predominant, neurological manifestations are notable complications of TA. These manifestations are variable and depend on the degree of stenosis or occlusion of the supra-aortic vessels [4], with reported incidence rates ranging from 57% to 80% [5]. They primarily present as non-specific symptoms, such as headaches, dizziness, and visual disturbances [5], and more rarely as manifestations secondary to ischemic strokes, which rarely complicate the disease.

IS can present as rapidly resolving transient ischemic attacks (TIAs) or as established IS, as seen in our patient [6]. The main mechanism involves stenotic-occlusive lesions of the SATs, leading to infarcts in downstream vascular territories. Additionally, a thromboembolic origin for arterial occlusions has also been suggested.

The occurrence of an IS as the first manifestation of TA is a relatively unusual phenomenon, making our observation distinctive. However, it is crucial to consider this diagnosis in young patients presenting with IS without significant prior medical history.

The etiological diagnosis of IS in Takayasu's disease relies on clinical criteria and vascular abnormalities observed

through imaging. Moreover, searching for systemic manifestations of the disease, including inflammatory signs such as elevated erythrocyte sedimentation rate (ESR), should be complemented by biological tests and immunological workup to exclude other etiologies, particularly connective tissue diseases.

Imaging strongly supports the diagnosis by revealing vascular lesions, typically long stenoses. Angiography is almost no longer used, replaced by less invasive tests such as CT angiography, MR angiography, or Doppler ultrasound, which are particularly valuable in assessing the condition of the arterial wall of the SATs [7]. Positron emission tomography (PET) imaging also seems useful in confirming whether arterial involvement is inflammatory.

The management of TA complicated by IS involves a multimodal approach. The mainstay of treatment consists of corticosteroids and immunosuppressants to better control vascular inflammation and reduce the risk of stenosis progression. However, additional interventions may be required to restore vascular perfusion in cases of significant or symptomatic stenoses [8]. Furthermore, angioplasty has now largely replaced surgery, with high success rates, and is primarily indicated for stenoses of the supra-aortic trunks.

Additionally, patients may benefit from anticoagulant or antiplatelet therapy to reduce the risk of stroke recurrence or embolism. Finally, in cases of severe neurological complications, early rehabilitation is essential to improve functional prognosis [3].

Conclusion

Takayasu's arteritis is a rare condition, exceptionally presenting with an ischemic stroke. This diagnosis should be considered and investigated in any young patient with a cerebrovascular accident, particularly in the presence of cardiovascular abnormalities such as blood pressure asymmetry, vascular murmurs, and an elevated ESR. The diagnosis is confirmed by imaging, which reveals stenotic-occlusive lesions of the aorta and its major branches. The treatment of choice mainly involves corticosteroid therapy, combined with angioplasty if necessary, to restore vascular perfusion and prevent neurological sequelae.

Conflict of Interest

The authors declare that they have no conflict of interest.

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