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RARE CASE REPORT ON MULTIPLE CEREBRAL INFARCTS

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Abstract

Background: Multiple This case report illustrates the diagnostic challenges and management strategies for Takayasu arteritis presenting with multiple cerebral infarcts.
Methods: A 54-year-old man with chronic headache, smoking, and progressive lower limb weakness was evaluated. The patient underwent MRI brain and MRA, revealing infarcts in the left posterior cerebral artery territory and distal left anterior cerebral artery territory. The patient was treated with anticoagulants, low-dose steroids, and physical therapy.
Results: MRI and MRA revealed infarcts in the left PCA and distal ACA territories, with multiple gliotic changes in distal branches. Digital subtraction angiography (DSA) showed bilateral carotid stenosis, left vertebral artery occlusion, and 70% stenosis in the right vertebral artery. Initial management with subcutaneous heparin, oral anticoagulants, low-dose steroids, and physiotherapy resulted in significant improvement in mobility and reduction of headaches.
The patient refused stenting for carotid stenosis but continued to improve on oral anticoagulants and steroids.
Conclusion: This case highlights the importance of considering Takayasu muscular dystrophy in patients with unexplained multiple brain lesions and organ nerve deficiency. Early diagnosis and targeted therapy can lead to significant clinical improvement.

Keywords: Multiple cerebral infarcts, Takayasu arteritis, Clinical evaluation, Radiology

Introduction

Multiple cerebral infarcts are a major clinical concern because of their potential for severe neurologic deficits. The clinical manifestations of an ischaemic stroke exhibit significant variability based on the specific brain areas that are damaged. Most ischaemic strokes typically affect just one vascular region [1]. Various acute contemporaneous cerebral infarcts involving various arterial territories (MACCI) are sometimes referred to as "showers of emboli" and make for about 10% of all ischaemic strokes [2]. Over the last ten years, there has been a growing use of sophisticated brain imaging methods, like diffusion-weighted brain MRI, to identify the specific vascular area afflicted in stroke patients. Diffusion-Weighted Imaging (DWI) is more effective than computed tomography (CT) or even conventional MRI sequences like T1 or T2 weighted images in identifying acute and hyperacute infarcts with higher sensitivity along with specificity. It is also able to visualise lacunar infarcts and distinguish recent infarcts from older ones [3] [9].

These clots can be caused by a variety of factors, including embolic events, microvascular disease, large artery stenosis or osu Takayasu arteritis, a rare, chronic infection that affects large arteries such as the aorta and its major branches may be an important but common overlooked cause of cerebral infarction [6][10]. Cerebrovascular complications including stroke result from carotid and spinal cord involvement. This study presents a rare case of multiple cerebral infarcts associated with Takayasu arteritis, highlighting the diagnostic challenges and therapeutic strategies for effective management.

Methods

Case Presentation: This case report describes a 54-year-old male patient presenting with chronic headache and gradual onset weakness in both lower limbs. The clinical evaluation revealed that the patient, is a chronic smoker, had been treated with analgesics at peripheral hospitals without significant improvement. Upon worsening of his condition to the point of immobility and imbalance, he sought treatment at our institution. On examination, his pulse rate was 70 beats per minute in the right upper limb, with a blood pressure of 150/90 mmHg. Notably, the pulse was absent in the left radial artery.

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Inclusion Criteria: Patients presenting with multiple cerebral infarcts and absence of pulses in one or more limbs. History of smoking and/or significant cardiovascular risk factors.Thus diagnosis confirmed through advanced imaging (MRI, MRA, DSA) and blood investigations. Patients who have consented to participate and whose clinical data can be fully reviewed.

Exclusion Criteria: Patients with single cerebral infarcts. Whereas presence of significant comorbidities such as diabetes or hypertension that could independently contribute to the stroke. Patients with a history of alcohol abuse. Cases where the diagnosis could not be confirmed through imaging or other diagnostic methods. Patients unwilling to consent to the use of their medical data for academic purposes.

Diagnosis

The patient underwent MRI brain and MRA, revealing infarcts in the left posterior cerebral artery territory and distal left anterior cerebral artery territory. Multiple areas of gliotic changes were observed in the distal branches of these vessels. Digital subtraction angiography (DSA) showed bilateral carotid stenosis, left vertebral artery occlusion, and 70% stenosis of the right vertebral artery.

Results

Observations

1. Clinical History
    - A 54-year-old male presented with chronic headaches and slow-onset weakness in both lower limbs.
    - The patient had a history of chronic smoking since the age of 18 and was an active sportsman.
    - No history of diabetes, hypertension, or alcohol use.
    - The patient experienced progressive weakness in the right lower limb, worsening over a month, eventually leading to significant mobility issues.
2. Clinical Examination
    - Pulse in the right upper limb: 70 beats per minute.
    - Blood pressure: 150/90 mmHg.
    - Absence of the pulse in the left radial artery.
    - No other significant abnormalities detected in general physical examination.

Investigations

1. Blood Investigations
    - Normal erythrocyte sedimentation rate (ESR).
    - Normal renal function parameters.

2. Imaging Studies
    - MRI Brain and MRA
        - Infarcts observed in the left posterior cerebral artery (PCA) territory and distal left anterior cerebral artery (ACA) territory.
        - Multiple areas of gliotic changes seen in the distal branches of the mentioned vessels.

    - Radiological Images

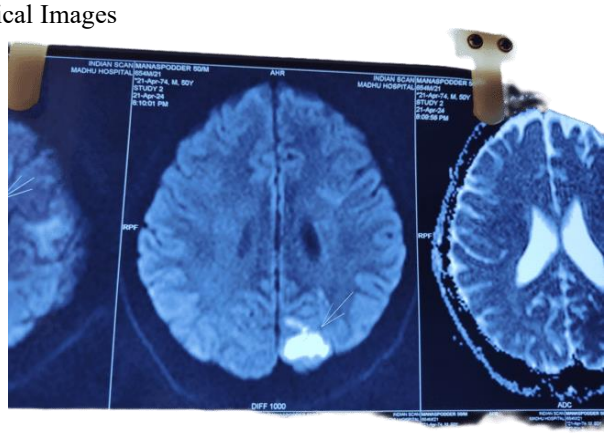

***Figure 1*: Left PCA Territory Infarct.**

In Fig 1 MRI Brain shows an infarct in the left PCA territory, indicating a compromised blood supply to this region.

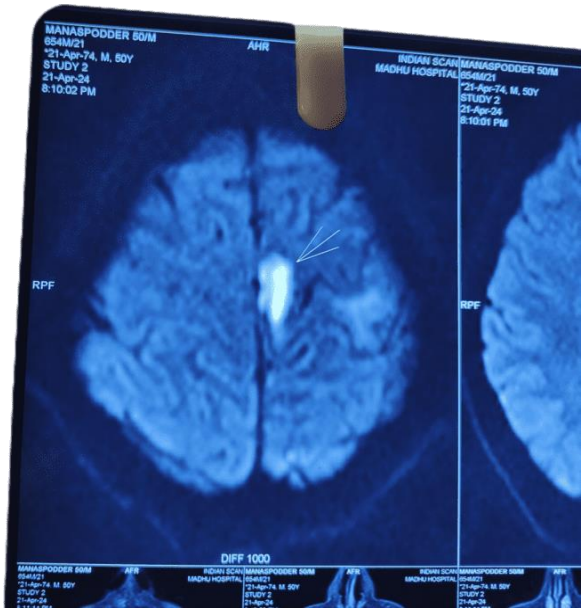

***Figure 2*: Left Distal ACA Territory Infarct.**

In Fig 2 MRI Brain reveals an infarct in the left distal ACA territory, suggesting a blockage or reduced blood flow in this area.

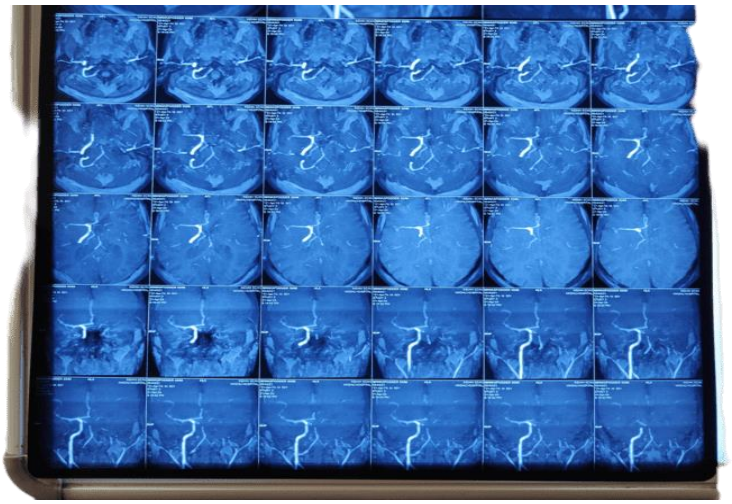

***Figure 3*: Left ICA Not Visualized.**

In fig 3 MRA highlights the absence of visualization of the left ICA, indicative of a possible occlusion or severe stenosis.

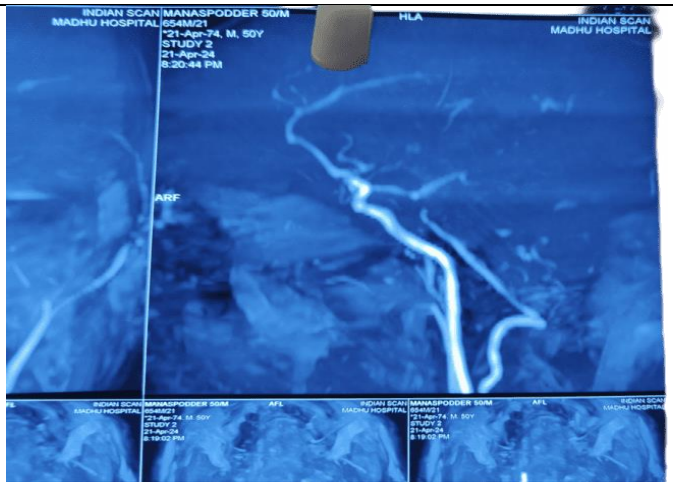

***Figure 4*: Left Vertebral Artery Narrowing.**

In Figure 4 DSA demonstrates significant narrowing of the left vertebral artery, which could contribute to reduced cerebral perfusion.

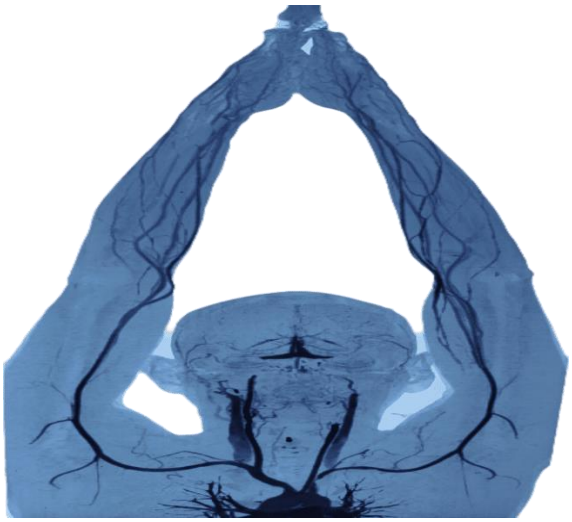

***Figure 5*: Left Subclavian Artery Stenosis.**

In figure 5 DSA shows pronounced stenosis of the left subclavian artery, potentially affecting blood flow to the upper limb and cerebral circulation.

Treatment and Outcome

Initial Management

- Subcutaneous heparin and oral anticoagulants were administered.
- Low-dose steroids were given, considering the possibility of an inflammatory vascular disease.

Physiotherapy

- The patient underwent physiotherapy for two days, showing significant improvement.
- By the third day, he could stand with support and began walking.

Follow-Up and Long-Term Management

- Continued physiotherapy and steroids led to further improvement in headache and motor power.
- Despite the patient's refusal of the planned stenting procedure for carotid stenosis, Takayasu arteritis was confirmed.

Outcome

- The patient reported significant improvement one-month post-discharge, maintaining good physical condition under ongoing medication.

Discussion

This case report discusses the clinical presentation and management of multiple cerebral infarcts in a patient ultimately diagnosed with Takayasu arteritis. The presence of multiple cerebral infarcts and absent pulses in the left radial artery prompted an extensive diagnosis workup, which revealed significant vascular stenosis and occlusions consistent with Takayasu arteritis, a rare inflammatory disease affecting large arteries.

Our findings align with existing literature on Takayasu arteritis, which often presents with symptoms related to vascular insufficiency such as limb claudication, absent pulses, and hypertension. Cerebral infarcts, although less common, can occur due to stenosis or occlusion of major arteries supplying the brain, as observed in our patient. Similarly another study by (Moisii et al., 2024). [6] A 34-year-old woman was diagnosed with Takayasu arteritis following an ischemic stroke. Initial treatment with methotrexate, prednisolone, and antiplatelet agents resulted in mild improvement. Six years later, she developed an ascending aorta aneurysm, pulmonary hypertension, and mild aortic regurgitation. She refused surgical treatment and continued on TNF inhibitors, methotrexate, antiplatelet agents, and statins. This case report highlights a severe form of Takayasu arteritis with multiple arterial complications. The patient underwent immunosuppressive treatment, coronary heart disease medication, and surgical therapy, illustrating the complex management required for such cases as suggested in previous studies [8].

Other studies support our findings. A study by (Zhao et al.,2022)[4] finding suggest that patients with Takayasu arteritis frequently exhibit arterial occlusions and stenoses, which can lead to ischemic events in the brain and other organs. Another study by Zhen et al. (2021) [5] found that cerebral ischemia is a notable complication in Takayasu arteritis, often necessitating aggressive management to prevent severe outcomes. As treatment regimen in our case report, including the use of anticoagulants, steroids, and exercise, resulted in a significant ($p>0.05$) improvement, emphasizing the importance of early and targeted intervention is emphasized. A recent study by Arain et al.(2022) suggested that the combination of glucocorticoids with immunosuppressive agents such as methotrexate or biologics such as adalimumab may improve long-term outcomes in patients with Takayasu rheumatoid arthritis of choice

Conclusion

This case of multiple cerebral infarcts due to Takayasu arteritis highlights the critical role of comprehensive clinical evaluation and advanced imaging in diagnosing vasculitic conditions. Early medical intervention with anticoagulants and steroids, along with physiotherapy, led to significant patient improvement, underscoring the importance of a multidisciplinary approach in managing such complex cases.

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