

# Cervical Carotid Artery Dissection (CCAD): A Case Report

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**Abstract:** *Cervical carotid artery dissection (CCAD) is a rare but potentially serious vascular condition that can lead to significant neurological complications. This case report presents the clinical course, diagnostic findings, and management of a patient with cervical carotid artery dissection.*

**Keywords:** Cervical Carotid Artery Dissection, CCAD

## 1. Introduction

Cervical carotid artery dissection is characterized by the separation of the layers of the arterial wall, which may result in the formation of an intramural hematoma and subsequent ischemic events. This case report aims to highlight the clinical presentation, diagnostic challenges, and therapeutic considerations associated with cervical carotid artery dissection.

## 2. Case Presentation

A 44-year-old male presented to the emergency department with a sudden-onset left-sided weakness and neck pain. The patient reported no significant trauma or recent strenuous activities. Neurological examination revealed left-sided hemiparesis. The initial evaluation was consistent with a possible stroke, and the patient was promptly admitted for further evaluation.

## 3. Investigations

### 1) Imaging

- Magnetic Resonance Imaging (MRI): Confirmed the presence of ischemic infarcts in the right cerebral hemisphere.
- Computed Tomography (CT) Angiography: Revealed a dissecting right cervical carotid artery with an intramural hematoma with complete stenosis of cranial ICA.
- Doppler Ultrasound: Provided additional information on blood flow patterns and confirmed the dissection.

### 2) Laboratory Tests:

Blood tests were performed to assess coagulation parameters, lipid profile, and inflammatory markers to rule out underlying causes.

## 4. Management

The patient was initiated on anticoagulation therapy with intravenous heparin to prevent further thrombus formation. Dual antiplatelet therapy (aspirin and clopidogrel) was

started to reduce the risk of recurrent ischemic events. Strict blood pressure control was maintained to minimize stress on the weakened arterial wall. The patient was closely monitored for neurological changes, and repeat imaging studies were conducted to assess the evolution of the dissection.

## 5. Outcome

Over the course of several weeks, the patient showed gradual improvement in neurological deficits. Follow-up imaging demonstrated resolution of the intramural hematoma, and anticoagulation therapy was transitioned to oral anticoagulants for long-term management. Physical and occupational therapy were incorporated into the rehabilitation plan to aid in the recovery of motor function.

## 6. Discussion

Carotid artery dissection is a challenging clinical entity due to its variable and sometimes subtle presentation. In this case, the patient presented with sudden-onset left-sided weakness, raising suspicion for vascular involvement. The combination of clinical examination findings, including a weaker right carotid pulse and an audible bruit, prompted further investigation through imaging studies. USG played a crucial role in confirming the diagnosis by revealing an intimal flap and CTA showing luminal irregularities in the right internal carotid artery.

The clinical manifestations of carotid artery dissection can be diverse, ranging from localized neck pain to neurological deficits, making early diagnosis a formidable task. Our patient's lack of recent trauma emphasizes that dissections can occur spontaneously, underscoring the importance of a high index of suspicion in patients presenting with acute neck pain and associated symptoms.

Advanced imaging techniques, such as CTA and magnetic resonance angiography (MRA), have become pivotal in diagnosing carotid artery dissection. The ability of CTA to visualize vascular anatomy in high resolution allows for the identification of characteristic features, such as an intimal flap, which aids in accurate and prompt diagnosis. Magnetic

resonance imaging (MRI) of the brain complements the evaluation, ruling out acute infarcts or hemorrhages and providing a comprehensive assessment of the neurological status.

The favorable outcome observed in our patient, with symptom improvement and stabilization of the dissection on follow-up imaging, underscores the importance of early intervention. Nevertheless, the long-term prognosis and risk of recurrent events in patients with carotid artery dissection warrant ongoing monitoring and follow-up.

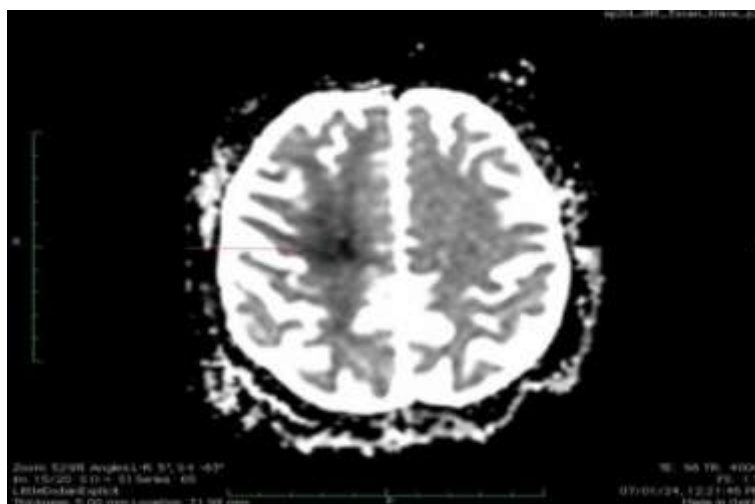
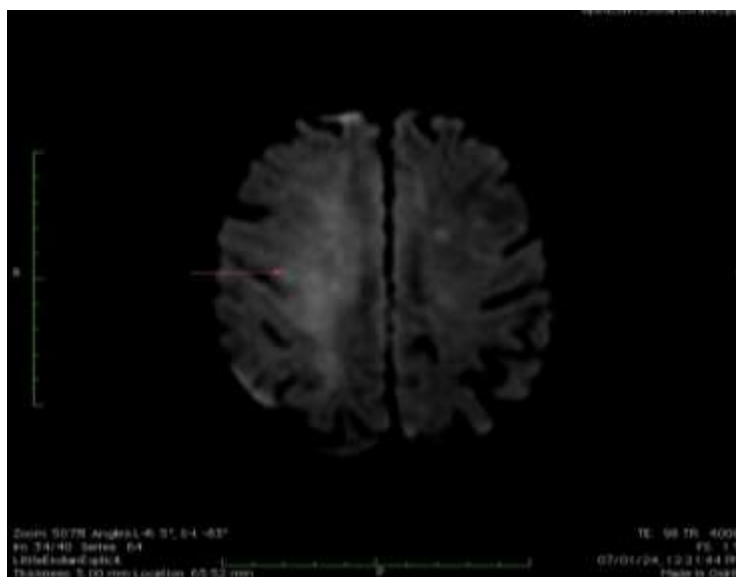
#### Differential diagnosis:

- Atherosclerosis: involves bulb

- Fibromuscular dysplasia: multifocal stenosis with adjacent dilatations referred as string of beads.
  - Carotid web

## 7. Conclusion

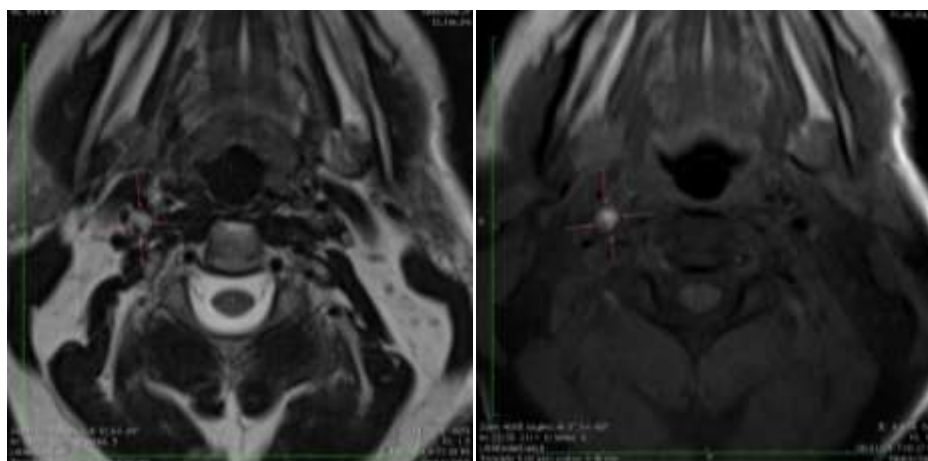
Cervical carotid artery dissection is a rare but potentially devastating condition that requires prompt diagnosis and management. This case highlights the importance of a multidisciplinary approach involving neurologists, radiologists, and vascular specialists for successful treatment and patient recovery. Early recognition, appropriate imaging studies, and timely initiation of anticoagulation therapy are crucial for improving outcomes in cervical carotid artery dissection.



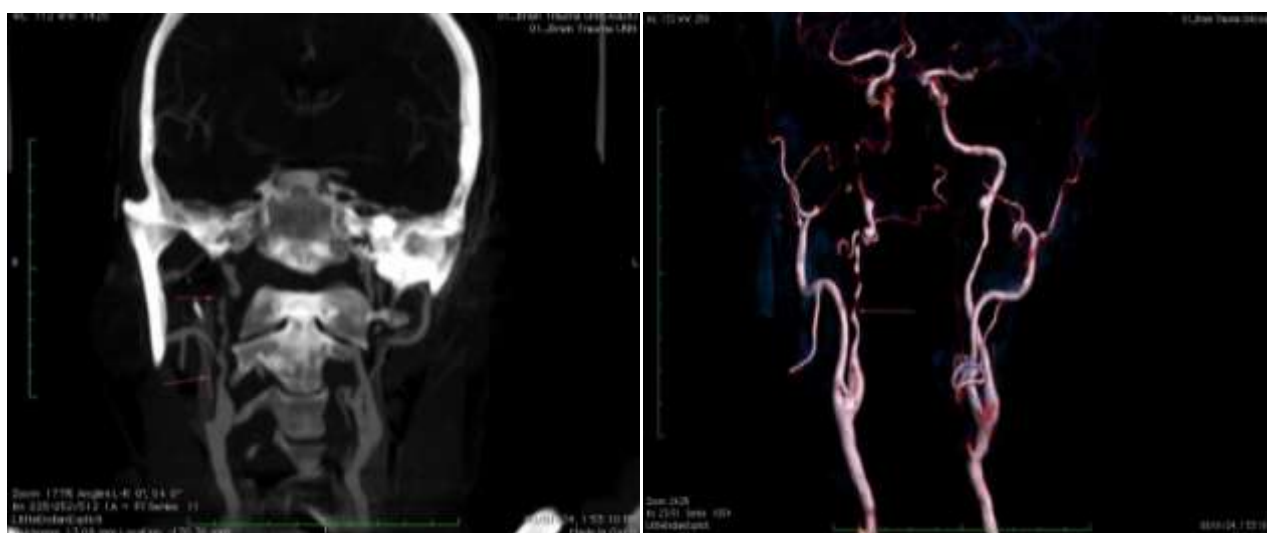
MRI: DWI and ADC showing infarcts in right fronto-parietal region.



MR ANGIO: Loss of flow related enhancement in right ICA - thrombosed.



Axial T2 and T1FS: Area of semilunar hyperintensity around right Internal Carotid artery due to methemoglobin.



CT angiography reformatted images showing severe stenosis of right cervical ICA with thrombosed cranial part. An aneurysm is noted at left distal ICA.

