



TWIST IN THE TALE - A CASE OF TORTUOUS BILATERAL COMMON AND INTERNAL CAROTID ARTERIES PRESENTING WITH SEIZURE

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ABSTRACT The tortuous carotid artery is a rare anatomic abnormality defined as vascular elongation leading to an altered course. It can be discovered incidentally or have clinically significant manifestations. The most common location is the internal carotid artery or, less commonly, the common carotid artery¹. This case report discusses a patient who had presented with tortuosity of both the common and the internal carotid arteries. Tortuous arteries and veins are commonly observed in clinical scenarios. While mild tortuosity is asymptomatic, severe tortuosity can lead to ischemic attack in distal organs. Clinical observations have linked tortuous arteries and veins with aging, atherosclerosis, hypertension, genetic defects and diabetes mellitus [1]. Due to the grave prognosis of the condition if left untreated, early diagnosis is of prime importance in preventing mortality.

KEYWORDS : syncope, seizures, tortuous carotids

INTRODUCTION

Bilateral tortuous carotid arteries are a vascular condition characterized by an abnormal twisting or looping of the carotid arteries on both sides of the neck. The carotid arteries, comprising the common carotid artery, internal carotid artery, and external carotid artery, are essential vessels responsible for supplying oxygenated blood to the brain, face, and neck. Typically, the common carotid artery bifurcates into the internal and external branches at the level of the fourth cervical vertebra, with the internal carotid artery primarily serving the brain and the external carotid artery supplying the face and scalp.

Under normal anatomical conditions, the carotid arteries are relatively straight, allowing for efficient blood flow. However, in cases of tortuosity, these vessels can become elongated and convoluted due to factors such as age, hypertension, and atherosclerosis. This abnormal curvature can lead to vascular complications, including compromised blood flow, increased turbulence, and a higher risk of thromboembolic events. While many individuals with tortuous carotid arteries remain asymptomatic, understanding the normal anatomy and potential alterations is crucial for effective diagnosis and management, particularly in preventing neurological events.

Case Report:

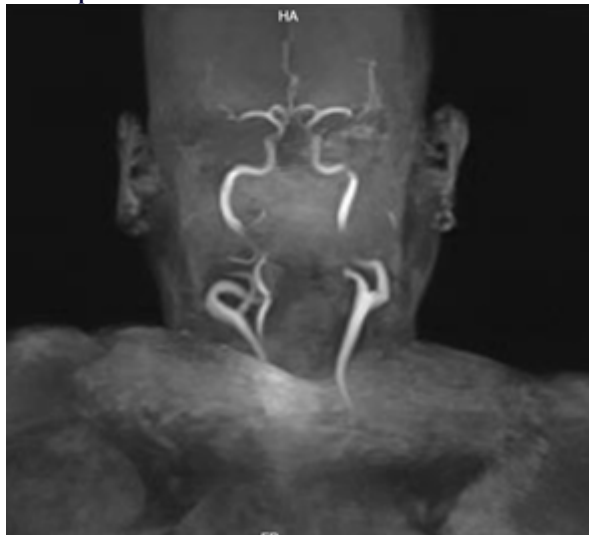


Figure 1 – Coronal View Showing Tortuous Cervical Part Of Internal Carotid

A 63-year-old woman presented to the Emergency Department with history of seizure and loss of consciousness. The seizure was a generalized tonic clonic episode and the loss of consciousness lasted for about two minutes with spontaneous resolution and full recovery of baseline consciousness. Patient also gave history of intermittent palpitations and diaphoresis associated with giddiness for the past two years which had been increasing in frequency. These symptoms had

started occurring multiple times every day and settled only on lying down. She had been having dysphagia for the past 6 months for which upper GI endoscopy was done and a diagnosis of antral gastritis was made. Patient had been having seizure episodes for the past 5 years and was evaluated by a neurologist and was started on anti-epileptic drugs. MRI brain for 5 years ago was normal. The patient was treated with tablet levetiracetam and tablet lamotrigine and was as prophylaxis for seizures. Although the patient was symptom free, the patient continued to have sporadic episodes of palpitations which settled only by lying down supine and resting. The patient's quality of life was significantly affected because of recurrence of symptoms and significant giddiness and feeling of impending syncope arising from the condition.

She was also a known case of ischemic heart disease with the 2D ECHO showing an ejection fraction of 40%. Patient was admitted to the intensive care unit and treated. MRI brain with neck vessels was done which showed age related ischemic changes in the brain.

MRI neck vessels showed tortuous common carotid arteries bilaterally and tortuosity of cervical part of bilateral internal carotid arteries.



Figure 2 – Sagittal View

As the patient was shifted back from the MRI, the patient started complaining of palpitations and had a syncope. ECG monitoring at the time showed ventricular tachycardia. CPR was commenced, endotracheal intubation was done and the resuscitation was continued as per standard guidelines. However, after thirty minutes, the patient did not achieve return of spontaneous circulation and hence was declared dead.

DISCUSSION:

Clinical and experimental studies have demonstrated a strong association between vessel tortuosity and mechanical factors, such as blood pressure, blood flow, axial tension and wall structural changes.

First, artery tortuosity has been shown to be associated with hypertension. Tortuosity of cerebral arteries was found to be associated with the severity of hypertension^[1].

Second, weakening of the arterial wall has been associated with tortuous vessels. Degradation of elastin, an important extracellular matrix component, weakens the arterial wall^[2,3,4] and leads to tortuosity. Elastin deficiency has been associated with tortuous arteries in patients with arterial tortuosity syndrome. Increased blood flow also leads to tortuous cerebral arteries associated with elastin degradation^[5]. The fragmentation of elastin has been reported in the artery wall of subjects with artery tortuosity and has been considered a cause of vessel lengthening^[6].

Measurement Of Vessel Tortuosity

The level of vessel tortuosity is often described by the tortuosity indices. A commonly used tortuosity index is defined as the ratio of vessel curve length over the line distance between the two ends^[1].

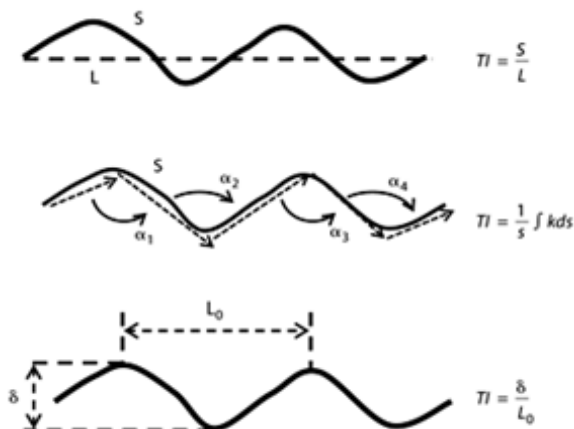


Figure 3 - The integrated curvature of the middle panel is equal to the cumulative sum of angles 1–4. Hai-Chao Han, 2012. Twisted blood vessels^[1]

CONCLUSIONS

This case report proves that early diagnosis would have been life changing for the patient. A high level of suspicion, thorough history taking and proper investigations can identify the rare causes and prevent morbidity and mortality. Any unresolved neurological illness such as seizure or syncope with a normal brain imaging warrants investigation of the blood vessels supplying the brain.

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