



# ORIGINAL RESEARCH PAPER

# Medicine

## HEMIPARESIS AS A RARE PRESENTATION OF CAVERNOUS SINUS THROMBOSIS

**KEY WORDS:** cavernous sinus thrombosis, Internal carotid artery, hemiparesis

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### ABSTRACT

Cavernous sinus thrombosis refers to clotting within the cavernous sinus, usually resulting from infection such as sinusitis, orbital or preseptal cellulitis or otitis media . The valveless nature of the veins connecting the cavernous sinus causes easy spread of infection. Septic cavernous sinus thrombosis is seldom seen now as the incidence of cavernous sinus thrombosis has been decreased greatly with the advent of potent antimicrobial agents. Septic cavernous sinus thrombosis follows a facial or sphenoid sinus infection.

Hemiplegia is a fairly unusual presentation of cavernous sinus thrombosis and in most cases is due to involvement of the internal carotid artery. We report here a case of cavernous sinus thrombosis, which was associated with rare complication of hemiparesis due to middle cerebral artery territory infarct. Hence, early recognition by MRI is the key factor for the accurate diagnosis of extension of intracranial complication and involvement of narrowing of the Internal Carotid Artery.

Therefore we suggest that in patients of ischemic stroke, careful cranial nerve and ophthalmological examination should be done to rule out cavernous sinus thrombosis so that proper antibiotics can be started at the earliest so as to reduce morbidity and mortality.

### INTRODUCTION

Cavernous sinus thrombosis refers to clotting within the cavernous sinus, usually resulting from infection such as sinusitis, orbital or preseptal cellulitis or otitis media<sup>1</sup>. The valveless nature of the veins connecting the cavernous sinus causes easy spread of infection<sup>2</sup>. It was first described by Bright in 1831<sup>3</sup>.

Features are of rapid onset and may include severe headache, malaise, nausea and vomiting, unilateral or often bilateral proptosis, chemosis, congestion of the pupil, conjunctival and retinal veins, reduced vision and signs resulting from compromised function of the third to sixth cranial nerves, which run through the cavernous sinus<sup>1</sup>.

Neurological complications uncommonly occur in the form of ophthalmoplegia, blindness, hemiparesis and pituitary insufficiency<sup>4</sup>. Here, we report a case of hemiparesis due to cavernous sinus thrombosis as a result of thrombosis of internal Carotid Artery passing through cavernous sinus. Hence, we suggest that in patients of ischemic stroke careful cranial nerve and ophthalmology examination should be done to rule out cavernous sinus thrombosis as a cause of hemiparesis.

### CASE REPORT

A 49 year old diabetic male was admitted to our hospital with a persistent high grade fever associated with right eye redness, proptosis and eye pain for 7-8 days. He had a history of diabetes mellitus for 5 years. All these symptoms developed following a tooth extraction 15 days back. There was no history suggestive of sinusitis, ear discharge, trauma or involvement of the other eye. After 2 days of admission, patient developed sudden onset weakness of the left side of the body with facial asymmetry.

On examination, he was conscious, oriented but febrile and highly irritable. There was marked chemosis in the right eye along with a fixed dilated pupil, ptosis and complete ophthalmoplegia of the right eye. Examination of the other eye was normal.

All routine investigations were normal except for a raised total leucocyte count (TLC) that is 19,700/cumm with neutrophils around 80%. CSF and blood culture was sterile. MRI of the brain with orbit was done on the same day, which showed, right cavernous sinus thrombosis, thrombosis of the right intracranial

internal carotid artery and acute infarct in the right middle cerebral artery territory.

MRI with contrast showed right cavernous sinus thrombosis extending to right transverse and right sigmoid sinus thrombosis along with right internal carotid artery thrombosis.

He was started on intravenous antibiotic Ceftriaxone 2gms, Vancomycin 1gm twice a day and intravenous metronidazole 400mg thrice a day along with anti fungals. Patient was kept on regular acting Insulin for blood sugar control. Anti-platelet (Aspirin 150mg/day), Mannitol 20% 100ml thrice daily and previously prescribed antibiotics were continued. The patient recovered after 2 weeks of treatment and is doing well on follow up.

### DISCUSSION

Septic cavernous sinus thrombosis is seldom seen now as the incidence of cavernous sinus thrombosis has been decreased greatly with the advent of potent antimicrobial agents. The mortality rate has dropped from almost 100% before the advent of antibiotics to less than 30% at present<sup>5</sup>.

Septic cavernous sinus thrombosis follows a facial or sphenoid sinus infection<sup>6</sup>. 70% of cases are due to staphylococci (including MRSA), and the remainder are due primarily to aerobic or anaerobic streptococci<sup>6</sup>.

Hemiplegia is a fairly unusual presentation of Cavernous sinus thrombosis and in most cases is due to involvement of the Internal Carotid Artery<sup>7</sup>. Involvement of this artery is uncommon and occurs in the form stenosis, occlusion and aneurysm formation.<sup>7</sup> As the Internal carotid artery lies within the cavernous sinus its involvement may indicate cavernous sinus thrombosis, however it is seldom seen in practice.<sup>7</sup>

Diagnosis is with imaging, especially MRI and MRI venography, systemic investigation for the infection is also performed, including lumbar puncture. MRA is the gold standard method to identify the filling defect of the cavernous sinus.<sup>8</sup>

Treatment consist of intravenous antibiotics and sometimes surgical drainage. Favourable outcome requires prompt diagnosis and institution of early antibiotics so as to reduce morbidity and mortality.

## CONCLUSION

There is a decrease in incidence of cavernous sinus thrombosis because of wider use of antibiotics. We report here a case of cavernous sinus thrombosis, which was associated with rare complication of hemiparesis due to middle cerebral artery territory infarct. Hence, early recognition by MRI is the key factor for the accurate diagnosis of extension of intracranial complication and involvement of narrowing of the Internal Carotid Artery.

Therefore we suggest that in patients of ischemic stroke, careful cranial nerve and ophthalmological examination should be done to rule out cavernous sinus thrombosis so that proper antibiotics can be started at the earliest so as to reduce morbidity and mortality.

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