

**Otitis media leading to rare life-threatening disorder-cavernous sinus thrombosis**

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**Conflicts of Interest:** Nil

**Abstract**

We report a case of cavernous sinuses thrombosis, which is a rare and life-threatening entity. Early recognition and prompt management is the crucial time to save life. We lost this patient because of delay in reporting to us and lack of suspicion at other health institutions.

**Keywords:** Caver nous sinus, life threatening, anti-microbial, anti-thrombotic

**Introduction**

Cavernous sinus thrombosis (CST) is a rare and life-threatening disorder that can complicate facial infection, sinusitis, orbital cellulitis, pharyngitis or otitis media. Cavernous sinus thrombosis is commonly septic, but it may be aseptic as following trauma or surgery. Early

recognition and prompt management of cavernous sinus thrombosis is lifesaving. Despite modern treatment with antibiotics and anti-coagulation, the risk of long-term sequelae, such as vision loss, diplopia, and stroke are commonly seen<sup>(1,2)</sup>.

Immuno suppression, such as diabetes, steroid use, cancer, or Chemotherapy, maybe a risk for developing cavernous sinus thrombosis, as well as developing complications. Diagnosis of cavernous sinus is based on neuro imaging studies (CECT or MRI head with venogram).

Anti-microbials which cover Staphylococcus, anaerobes and antifungal and antithrombotic therapies are used for

treating cavernous sinus thrombosis. Surgery is required only in case, if source or focus of infection is localised.

### Case

A 24 years old male presented in emergency department with complaints of altered sensorium for 8 hrs. He was agitated and talking irrelevantly. On examination, he was febrile and there was proptosis of right eye associated with chemosis and periorbital edema.

Bilateral pupils were dilated and left pupil was fixed and not reacting to light; right pupil was sluggishly reacting to light (Picture:1a). His BP was 160/80 mmHg, pulse = 62/ min, SpO2 95% on room air and RR 18/ min. On systemic examination, chest and cardio vascular examination was unremarkable.

On nervous system examination, he was moving all four limbs, deep tendon reflexes were elicitable in all limbs. Keeping possibility of cavernous sinus thrombosis, CECT head was advised and he was given mannitol and parenteral antibiotics (ceftriaxone and metronidazole). On reviewing history, he was complaining of severe left earache for 4 days, accompanied by headache and high-grade fever associated with chills and rigors.

During these periods, he developed deviation of angle of mouth to right side with inability to close left eye. With these complaints, he was admitted at peripheral hospital, where he was diagnosed as left sided Bell's palsy with acute otitis media left ear. After 4 days of hospitalization, he was discharged against medical advice. His laboratory investigation results were CBC-Hb-14.2 gm, TLC-3,700/ ul, platelet-1.17 lac/ ml, ESR-10mm/ hr, blood urea-56mg, s. creatinine-1.1mg/dl, LFT: AST-113 U/L, ALT-104 U/L, ALP-82 U/L, Serum electrolyte: Na-136, K-4.5, Cl-106. X - ray PNS view for sinuses was normal. CECT head revealed features suggestive of bilateral cavernous sinuses thrombosis and

CT venography was also suggestive of bilateral cavernous sinuses thrombosis (Picture: 1b).



Figure 1:



Figure 2:

Picture 1a (left side) Proptosis and chemosis of right eye, picture 1b (right side) CECT suggestive of bilateral cavernous sinus thrombosis (white arrows showing hyper densities)

He was managed with parenteral antibiotics and low molecular heparin. Despite adequate and appropriate antibiotics and antithrombotic therapies, he succumbed to his underlying illness.

### Discussion

Cavernous sinus thrombosis is a rare and life-threatening disorder. This entity was first described in 1778 by Debase<sup>(3)</sup>. Infection is the most common cause of cavernous sinus thrombosis. Common sources of infection that can cause the cavernous sinus thrombosis

are facial infection, sinusitis, orbital cellulitis, pharyngitis and otitis media. Infection from facial regions may spread to cavernous sinuses through the facial venous plexus or from the sphenoid sinus, directly to adjacent cavernous sinuses<sup>(4)</sup>. The middle ear disease is the less common cause of cavernous sinus thrombosis<sup>(5)</sup>.

Staphylo coccus aureus is the most common infectious microbe, seen in 70% of cases<sup>(6)</sup> and streptococcus is the second leading cause. In presenting case, we could not ascertain the cause of infectious agent, because patient died within few hours of hospitalization. We presumed, septic focus in middle ear was responsible for cavernous sinus thrombosis. As he was suffering from severe earache on left side with fever and incidentally, he developed bell's palsy. For these complaints he was admitted in other health institution before presenting to our ED.

Patients with cavernous sinus thrombosis usually present with complain of fever, headache (50% to 90%), periorbital swelling and pain, vision changes, such as photo phobia, diplopia, loss of vision. Embolization of bacteria and other infectious organisms causes thrombosis that will lead to trapping of infection within the cavernous sinus.

The Cavernous sinus thrombosis leads to decreased drainage from the facial vein, superior and inferior ophthalmic veins resulting in facial and periorbital edema, ptosis, proptosis, chemosis, and pain with eye muscle movement, papilledema, retinal venous distention and loss of vision.

Symptoms and signs usually start in one eye and may develop in other eye within short time of interval. There was 100% mortality due to cavernous sinus thrombosis before antibiotic era. Now with availability and use of

antibiotics, the mortality is reduced to 20%<sup>(7)</sup>. For diagnosis, neuroimaging with CECT or MRI head with venogram are highly sensitive for detecting cavernous thrombosis<sup>(8)</sup>.

Anti-microbials and anti-thrombotic therapies are commonly used for treatment. The antibiotic should be anti – Staphylococcal, third generation cephalosporins and metronidazole for anaerobic coverage. Antifungal coverage should be given unless fungal infection is ruled out. Surgical interventions are not recommended for the cavernous sinuses, but some patients may need sphenoidotomy, ethmoidectomy, maxillary antrostomy, mastoidectomy, abscess drainage, orbital decompression or ventricular shunt placement.

### **Conclusion**

Cavernous sinus thrombosis is a rare life-threatening disorder, for diagnosis we need high index of suspicion. In patients presenting with headache, high grade fever and eye signs, cavernous sinus thrombosis should be ruled out. Prompt administration of antimicrobials with antithrombotic is the only conservative treatment modality.

### **References**

1. Matthew TJ, Hussein A. Atypical cavernous sinus thrombosis: a diagnosis challenge and dilemma. *Cureus*. 2018 Dec 4;10(12).
2. El Tayeb AS, Karrar MA, Elbeshir EI. Orbital subperiosteal abscess associated with mandibular wisdom tooth infection: a case report. *Journal of maxillofacial and oral surgery*. 2019 Mar 8; 18:30-3.
3. Cho JY, Kim HM, Ryu JY. Cavernous sinus thrombosis progression from trismus. *Journal of the Korean Association of Oral and Maxillofacial Surgeons*. 2015 Feb;41(1):43.

4. Lai PF, Cusimano MD. The spectrum of cavernous sinus and orbital venous thrombosis: a case and a review. *Skull base surgery*. 1996 Jan;6(01):53-9.
5. Mahdie Arian et, Septic Cavernous Sinus Thrombosis: *Iran Red Crescent Med J*. 2016 August; 18(8): e34961
6. Kiddee W, Preechawai P, Hirunpat S. Bilateral septic cavernous sinus thrombosis following the masticator and parapharyngeal space infection from the odontogenic origin: a case report. *Medical journal of the Medical Association of Thailand*. 2010 Sep 1;93(9):1107.
7. Southwick FS, Richardson Jr EP, Swartz MN. Septic thrombosis of the Dural venous sinuses. *Medicine*. 1986 Mar 1;65(2):82-106.
8. Southwick FS, Richardson Jr EP, Swartz MN. Septic thrombosis of the Dural venous sinuses. *Medicine*. 1986 Mar 1;65(2):82-106.