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Case Report

Valveless Veins of Face is Bane or Boon - A Case Report of Cavernous Sinus Thrombosis

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ABSTRACT

Background- Cavernous sinus thrombosis occurs as a secondary threatening condition to spread from local or distant foci of infection.
Aims and Objectives- To emphasize the importance of valveless communications of cavernous sinus in dissemination of infection leading to thrombosis of the sinus.
Materials and Methods- A 25yr old female patient presented with complaints of drooping of left eyelid associated with headache since fifteen days.
Observations and Results- Patient had complete ptosis and restriction of extraocular movements except abduction and fixed dilated pupil non-reactive to light on the left side. CT scan was suggestive of cavernous sinus thrombosis.
Conclusion- Unusual features like initial sparing of Abducens nerve, absence of proptosis and chemosis was seen in this case. These features can lead to delayed diagnosis and associated complications. The need for early diagnosis and treatment of this potentially lethal condition is emphasized.

Key Words: Cavernous sinus, cavernous venous thrombosis, ptosis, ophthalmoplegia.

INTRODUCTION

The cavernous sinus lies between the layers of the dura on either sides of pituitary fossa, posterior to optic chiasma, just over the thin roof of sphenoid sinus and extends from the superior orbital fissure anteriorly to the apex of petrous temporal posteriorly. The right and left sinuses are connected by anterior and posterior inter-cavernous sinus and by basilar venous sinus. [1] Veins afferent to cavernous sinus drain the anterior portion of face, oral cavity, tonsils, pharynx, nasal cavity, orbit, eye and paranasal air sinuses, via the pterygoid plexus. Veins from middle ear, mastoid region, cerebral cortex and pituitary gland also drain into the cavernous sinus. Efferent flow from the cavernous sinus drains via the superior petrosal sinus to transverse sinus, and via the inferior petrosal sinus into the internal jugular vein. [1] The facial veins drain directly into superior and inferior ophthalmic veins. These in turn drain via many anastomoses into the cavernous sinus. [2]

All these intercommunicating channels are valveless and blood can flow in any direction. This fact makes these sinuses

most vulnerable for spread of infection from other sites leading to septic thrombosis. [3] Infection from middle third of the face is most important source. [3]

Cavernous sinus thrombosis may occur as secondary threatening condition to spread from local or distant foci of infection. [4] It is a lethal complication of facial abscess manipulation associated with high mortality and morbidity. [5]

CASE REPORT

A 25yr old female patient presented to ophthalmology OPD with complaints of drooping of left eyelid associated with headache since fifteen days (figure 1). Two weeks ago she had burst open a pustule at the angle of mouth on the left side with a safety pin and squeezed its contents following which she developed cellulitis of upper lip. She consulted a local physician and was treated with antibiotics and steroids for 3 days. After 8days she was admitted to a local hospital with complaints of eye pain and cellulitis of lower face. Patient was discharged after 2 days with another course of antibiotics and analgesics for one week. During this period the fever was on and off and patient noticed drooping of left upper eyelid for which she came to the ophthalmology department at Sakra World Hospital, Bangalore.

Observations

Patient had complete ptosis of left eye with mid dilated fixed pupil not reacting to both direct and indirect light and ophthalmoplegia of all movements except abduction of left eye (figure 2). On examination all cranial nerves were normal except oculomotor nerve. CT scan brain showed features suggestive of cavernous sinus thrombosis of left side without involvement of superior ophthalmic vein. Lumbar puncture was done and reports were within normal limits. Anticoagulants and broad spectrum antibiotics were advised for 2wks followed by antibiotics only for a month. On follow up after 45 days, patient had partially recovered with return of extra ocular movements in all gazes and improvement in ptosis (figure 3).

Figure 1- presentation with ptosis of left eye

Figure 2- ophthalmoplegia of all movements except abduction of left eye

Figure 3- partial recovery after 45 days

DISCUSSION

Although cavernous sinus thrombosis has become rare, it remains a potentially life threatening complication of an infection that may originate within the face, orbit, paranasal sinuses or temporal bone. [6] The extra cranial and intracranial venous connections of cavernous sinus play an important role in pathogenesis and symptomatology of cavernous sinus thrombosis and serve as pathways of potential complication. [6] The signs and symptoms vary according to which of surrounding structures are affected (viz. venous obstruction, involvement of adjacent nerves and generalized sepsis and meningitis). [1]

In the present case septic foci probably spread from pustule near the angle of mouth to the ipsilateral cavernous sinus through valveless veins of mid face. When superior ophthalmic vein is involved by retrograde spread from cavernous venous thrombosis, the signs of venous obstruction appear in eye like chemosis, eyelid edema, proptosis and dilated episcleral veins. These signs were not present in this case which lead to the delayed diagnosis.

A diagnosis can be made on the basis of CT brain findings. Clot formation appears as multiple filling defects on high-resolution CT. [1] Differential diagnosis of cerebral malaria, meningitis or meningoencephalitis must be kept in mind. Complications like septic pulmonary embolism, carotid thrombosis, meningitis, subdural empyema and brain abscess may occur. [3] Staph Aureus is most commonly involved organism in cavernous venous thrombosis. The mainstay of therapy is early aggressive antibiotic treatment and if needed surgical drainage of infected sinuses. Use of anticoagulants is controversial. [1]

CONCLUSION

This case illustrates a varied presentation of cavernous venous thrombosis with following atypical features-

- Initial presentation without involvement of Abducens nerve- usually Abducens nerve is the first nerve to get involved in cavernous venous thrombosis due to its location in the body of sinus. The Trochlear nerve was also not involved.
- Only Oculomotor nerve which lies on lateral wall of sinus was involved which is misleading.
- No profound systemic toxicity (fever, myalgia or headache)
- No signs of venous congestion (proptosis, chemosis or dilated episcleral veins)

Late recognition and delay in treatment may increase the risk of morbidity and mortality. Although mortality of cavernous venous thrombosis has decreased, the morbidity remains high. Associated cranial nerve palsies may not resolve after treatment (squint, numbness & paraesthesia). [1] This case highlights the clinical anatomy of facial venous drainage to the cavernous sinus. Both physicians and neurosurgeons must recognize the early signs and symptoms, be aware of predisposing conditions, varied presentations and be prepared to administer prompt and appropriate therapies. In our modern age of computerization and laboratory based medical care, cavernous venous thrombosis demands the diagnostic skill of clinicians, whose prompt ministrations should usually yield a favourable result.

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