Case Report

Pansinusitis, cavernous sinus thrombosis and cerebral infarction

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Abstract

Cavernous sinus thrombosis is a fatal disease and require aggressive treatment. This progresses rapidly and sometimes there is intracranial extension. Here, we report a case of pansinusitis and cavernous sinus thrombosis that eventually developed middle cerebral artery territory infarct. Patient was middle aged diabetic and was having a history of tooth extraction 10 days back. We suggest that unusual complication of ischemic stroke with cavernous sinus thrombosis should be kept in mind, while dealing with these patients.

Key words: Cavernous sinus thrombosis, Infarction, Middle cerebral artery, Pansinusitis

INTRODUCTION

Cavernous sinus thrombosis is an acute septic thrombophlebitis of the sinus. The sepsis originates from pyogenic foci in the face, paranasal sinuses, ear, or orbit. It is a rare serious condition, which in preantibiotic era was 100% fatal. Cavernous sinus thromboplebitis, which was first reported by Duncan in 1821.[1] The outcome is fatal in approximately 30%, and residual seque-lae are seen in 23% ± 50% of cases.[2,3] Despite adequate intensive care, 44% ± 86% of survivors remain with chronic seque-lae, including cranial nerve lesions, hemiparesis, and hypopituitarism. Most of the survivors suffer weakness of the extraocular muscles, impaired vision or blindness.[4] There is a decrease in incidence of this entity because of wider use of antibiotic. We report here a case of pansinusistis and cavernous sinus thrombosis, which was associated with rare complication of hemiparesis due to middle cerebral artery (MCA) territory infarct. Very few cases are reported with this complication and to best of our knowledge we have presented the first case from North India.

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CASE REPORT

A 42-year-old male presented to our hospital because of a persistent high grade fever combined with the left eye congestion, proptosis, and eye pain for 8 days. He was having a history of diabetes mellitus for 5 years. All these symptoms developed following a tooth extraction 10 days back. Three days before admission patient developed diplopia and drowsiness. Physical examination in the revealed left eye ptosis, proptosis, chemosis, periorbital swelling, decreased visual acuity, neck stiffness with limitation of eyeball movement. There was no seizure, hemiparesis or any focal deficit at presentation. All other ystemic examination was normal. He was conscious on admission to hospital, but was having delayed response. Vital signs were stable: Blood pressure 130/78 mm Hg, pulse rate 100 bpm, respiratory rate 19 breaths/min and body temperature 103°F. Thick-slice (5 mm) brain computed tomography was carried out, which revealed no abnormality. All routine investigation was normal except raised total leucocyte count (TLC) that is, 19,700/cumm with neutrophils around 80%. Cerebrospinal fluid (CSF) study shows raised TLC, 1200/cumm with predominant neutrophils. CSF and blood culture was sterile. He was diagnosed as having fulminant cavernous sinus thrombosis with meningitis probably caused by sinusitis. He was started intravenous antibiotic ceftriaxone 2 g, vancomycin 1 g twice a day and intravenous metronidazlole 400 mg thrice a day. Patient was kept on regular and intermediate acting insulin for blood sugar control. Meanwhile magnetic resonance imaging (MRI) brain with orbit was planned. After 2 days of admission, patient

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developed sudden onset weakness of the right side of the body with deviation of mouth to the right side. MRI brain with orbit was done on the same day, which shows acute pansinusitis left side, left orbital and preseptal cellulitis, left cavernous sinus thrombosis, thrombosis of intracranial left internal carotid artery and acute infarct in left MCA territory [Figures 1-5]. Patient was started on antiplatelet (asprin 150 mg/day), mannitol 20% 100 mL thrice daily and previously prescrived antibiotics were continued. Patient was given antibiotic for 3 weeks, survived with hemiparesis and blindness of left eye.

DISCUSSION

Septic cavernous sinus thrombosis is now a rare disease as the incidence of cavernous sinus thrombosis has been decreased greatly with the advent of effective antimicrobial agents.[5] The cavernous sinuses receive venous blood from the facial veins (via the superior and inferior ophthalmic veins) as well as the sphenoid and middle cerebral veins. This complex web of veins contains no valves; blood can flow in any direction depending on the prevailing pressure gradients. Since the cavernous sinuses receive blood via this distribution, infections of the face including the nose, tonsils, and orbits can spread easily by this route. This condition occurred either after uncontrolled infection of the medial third of the face, which was most common primary focus, or from direct infection of the orbit, such as orbital cellulitis.[6] Sphenoid sinusitis and dental caries with root abscess may be complicated by this condition, although the latter has been much less common.[6-8] Differential diagnosis of this condition includes orbital abscess, which may mimic this condition and may be complicated by cavernous sinus thrombosis. However, with strict diagnostic criteria according to accepted clinical manifestations along with the presence of meningeal irritation signs, one should be able to differentiate these two conditions.[7-9] Absent corneal reflex is more often present in cavernous sinus thrombosis than in simple orbital abscess.[6,10] Occasional weakness of the opposite arm and leg or even both sides has been found in some patients.[4] Blindness as a result of cavernous sinus thrombosis is uncommon, occuring in <10% of cases.[5] *Staphylococcus aureus* was the most common causative microorganism.[10,11] Because

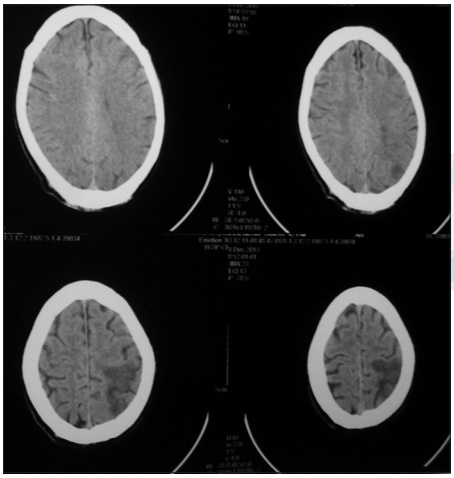

Figure 1: Noncontrast computed tomography head on the second day, showing hypodense area in left middle cerebral artery territory

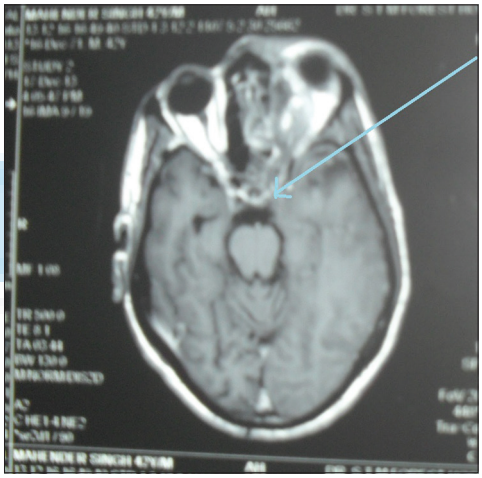

Figure 2: Magnetic resonance imaging brain showing large and bulky left cavernous sinus (blue arrow)

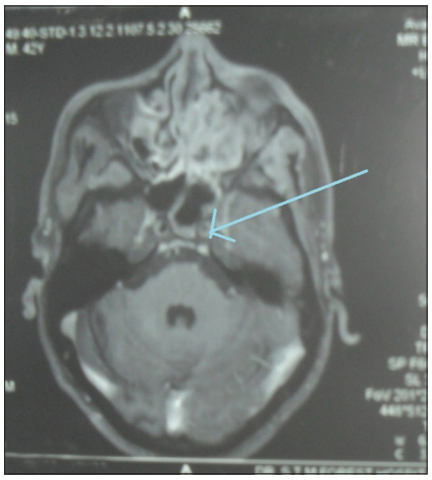

Figure 3: Magnetic resonance imaging brain showing narrowed left internal carotid artery (blue arrow)

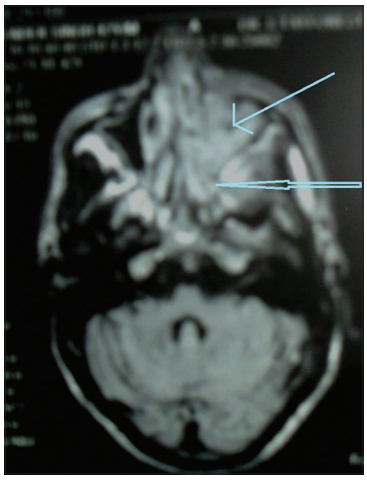

Figure 4: Magnetic resonance imaging brain showing left maxillary (thin blue arrow), ethmoidal and sphenoidal sinusitis (empty arrow)

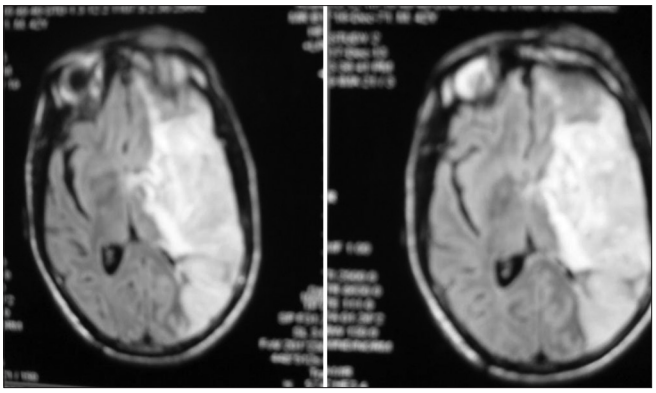

Figure 5: Magnetic resonance imaging brain showing large infarct in left fronto-tempero-parietal lobes, appears bright signal on diffusion weighted imaging sequences indicating restricted diffusion

this condition may cause severe neurologic deficits and high mortality early recognition is the key factor to good outcomes. Early MRI is necessary for the accurate diagnosis of extension of intracranial complications. Pediatrician's awareness of this illness, early recognition, investigation, including high-quality imaging demonstrating thrombosis of cavernous sinus and narrowing of the internal carotid artery, appropriate administration of antibiotics, antiplatelet agent, and proper supportive cares were the key factors leading to the good outcomes of complicated cavernous sinus thrombosis in our patient.

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