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Case Report

Aseptic Otogenic Lateral Sinus Thrombosis – A case report

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Abstract:

Background: In pre-antibiotic era Lateral Sinus Thrombosis (LST) was the second most common intracranial complication of otitis media with almost 100 % mortality. Now the trend has been changed. Easy availability of antibiotics has made this complication very rare. Mortality rate is also drastically reduced with alteration of the presentation of the disease.

Objectives: The aim of this case report is to focus on the altered presentation of the disease, do analysis and explain the reasons behind that.

Case Summary: It was a 65 years old, physically well build & psychologically sound gentleman admitted in the department of ENT-Head & Neck Surgery through Emergency with severe pain in left temporal region and concomitant history of discharge from Left ear in October, 2023. He was diagnosed as a case of LST otogenic in origin on MRI and MRV of brain.

Conclusions: Otogenic LST, though has become a rare entity, can still happen with different presentation. Therefore, keeping a high level of suspicion is essential for any patient coming with severe earache and middle ear infection. Though antibiotics are available as OTC (over the counter) choosing a wrong antibiotic, not adequate in terms of dosage and duration; can direct the clinical course towards a potentially dangerous catastrophe.

Key words: Chronic Suppurative Otitis Media, Lateral Sinus Thrombosis, Masked mastoiditis.

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Introduction:

Bangladesh as a developing country still facing very high rate of suppurative infection of middle ear & mastoid due to overcrowding, insufficient housing, poor personal hygiene, lack of breast feeding, poor nutrition, poor immunity, lack of proper vaccination coverage, passive smoking, frequent upper respiratory tract infection, high rates of nasopharyngeal colonization with potentially pathogenic bacteria and inadequate or unavailable health care.¹ Anatomical location of middle ear and mastoid within the temporal bone immediately below the middle & posterior cranial fossa makes these patients with suppurative Otitis Media vulnerable to develop intracranial complications e.g. Meningitis, encephalitis, brain abscess and Lateral sinus Thrombosis. These type of complications mostly develop in CSOM attic antral variety with or without cholesteatoma through direct erosion of bone. In comparison to them CSOM Tubotympanic variety is regarded as a safe counterpart. But if left untreated or treated reluctantly infection may harbor within the mastoid bone as masked mastoiditis or coalescent mastoiditis which has the potential to carry the infection to brain without any bone erosion.

The most important factor that contributes to the development of an otogenic LST is the proximity of the sigmoid sinus to the mastoid causing spread of infection from diseased mastoid to sigmoid sinus through direct erosion of the sinus plate and formation of perisinus abscess as seen in CSOM attic antral disease.^{2,3,4,5} It leads to thrombophlebitis of sinus wall and formation of a mural thrombus. Subsequently, there is incorporation of blood cells, activated platelet & fibrin into this thrombus with gradual expansion and complete occlusion of the lumen. Next incident is propagation of the thrombus upwards towards other dural venous sinuses

e.g. transverse, superior & Inferior sagittal sinuses or downwards towards the internal jugular vein.^{3,4} However, in ASOM and CSOM Tubotympanic variety the pathophysiology is different. Where the infection from diseased mastoid travels through thrombophlebitis of mastoid emissary vein & minute diploic veins within the bone into the adjacent Lateral venous sinus without any bone erosion.²

LST can be classified into two types Septic and Aseptic.⁴ In Aseptic type there is no fever and seen with primary thrombus formation in the dural venous sinuses. More common in females and in association with blood disorder eg. Thrombocytosis, sickle cell disease, leukemia or altered cerebral hemodynamic states such as: congestive heart failure, dehydration, malnutrition, diabetic ketoacidosis etc.^{2,4} In Septic LST there is secondary infection of the thrombus producing hectic rise of temperature known as "Picket fence fever"; where the characteristic spikes are due to shedding of infected thrombus into the circulation. More common in males. An otologist should be familiar with both the Septic lateral sinus thrombosis existence and Aseptic variant of it for early recognition and initiation of appropriate treatment.⁴

The classical signs and symptoms of Otogenic LST are high-grade "picket fence" fever, earache, discharging ear and altered mental status. Literature review shows that fever is one of the most frequent clinical signs upon presentation followed by headache due to stretching and inflammation of wall of sigmoid sinus, initially intermittent and localized, later on becomes more persistent and generalized due to rise of intracranial pressure, earache, otorrhea, nausea and/or vomiting, lethargy, neck stiffness and signs of mastoiditis.³ Tenderness and edema over mastoid (Griesinger's sign) are pathognomonic of septic lateral sinus

thrombosis and reflects inflammatory involvement of mastoid emissary vein.⁶ Most common neurological presentation in children are papilledema causing blurred vision, VI nerve palsy, diplopia, VII nerve palsy, seizure, ataxia, vertigo and strabismus.³

Orogenic Lateral sinus Thrombosis in pre-antibiotic era was the second most common intracranial complication after meningitis.^{2,3} With availability of good antibiotics it has become a rare entity & there is dramatic reduction of mortality rate due to early detection by radiological investigations & aggressive treatment.^{2,4,7} In the present days, patient may not present with classical picture of “Picket fence fever” of LSA. This is due to preadmission antibiotics therapy which may mask the rise of temperature in septic lateral sinus thrombosis and may make the accurate diagnosis of the disease difficult without radiological investigations.^{4,7}

A CT scan may be used, although MRI & Magnetic Resonance venography are proved superior in diagnosing orogenic LST.^{2,3,4} Laboratory test showing anemia and leucocytosis are also supportive of LST.⁷

Management of orogenic LST is broad spectrum intravenous antibiotics followed by mastoid surgery in the form of modified radical mastoidectomy in CSOM Atticoantral variety or cortical mastoidectomy in ASOM or CSOM tubotympanic variety. The role of anticoagulation therapy or drainage of the thrombus by giving incision over the lateral sinus after exposure is controversial. But can be advocated if there is evidence of propagation of thrombus, embolic events or neuralgic pain not controlled by antibiotics and mastoid surgery.^{4,7}

In our case of orogenic LST the patient presented with severe migraine like neuralgic pain in Lt temporal region with concomitant history of few months of discharge from Lt ear without any fevers.

Case Description:

The patient was a 65 years old gentleman, Hailing from Mirersharai, Chittagong; diabetic and hypertensive but otherwise healthy; was admitted in the Inpatient department of ENT - Head & Neck Surgery of Chattagram International Medical College, Shomsherpara, Chittagong, through emergency department with severe throbbing pain in Left temporal region for previous 4 months associated mild dizzy feeling while waking up from bed. The intensity of the pain was very similar to migraine headache or neuralgic pains. But it was intermittent in nature with 2-3 peaks in 24 hours lasting for 4-6 hours every time, non radiating and was not associated with nausea, vomiting, photophobia or phonophobia. Throughout the clinical journey he never had any fever. On examination of ENT head Neck region he was diagnosed to be a case of CSOM Left ear, Tubotympanic (TT) variety with an almost dry, central perforation in Tm (tympanic membrane). There was no pain on pressure over the mastoid region or edema in Left post auricular region. It was the very last thing in our mind that this pain could be orogenic in origin. On blood investigation he was found moderately anemic which might be responsible for the dizzy feeling. This finding also matches with the LST cases reported in the literature review. The patient was referred to the consultant neurologist seeking his valuable opinion to evaluate the pain. He advised for MRI of brain with MR venogram. The report was consistent with chronic venous sinus thrombosis marked in Left lateral sinus with evidence of recanalization in the post contrast films. The acute pain was relieved to some extent with a therapy combining NSAID with Tryptin & flunarizine. For safe breakdown of the thrombus & further recanalization of the lateral sinus patient was given Inj. Low Molecular Weight Heparin (Enoxeparin) twice daily for 7 days & Tab Warferin 10 mg daily till the

next follow up after 7 days with the reports of PT- INR. For complete eradication of infection from mastoid antrum & mastoid air cells. Tab Ciprofloxacin was added and advised to take for 6 weeks. When the patient was discharged from the hospital he was having negligible pain in Left temporal region. Patient was kept in touch over phone. But before we could make any attempt of mastoid surgery he was unfortunately diagnosed as a case of Chronic Lymphocytic Leukemia and died after a massive ischemic stroke; 17 days after the start of treatment of leukemia.

Discussion:

The case report is about a patient who had CSOM Left tubotympanic variety presented with severe headache in Left temporal region without any fever or any major systemic upset, without any impairment of vision or any impairment of higher cerebral function ; later on diagnosed as a case of LST Left on MRI and MRV of brain . In a study by Goodlatte B. Gilmore & Alan Austin Scheer it was seen that if the clot in LST is not infected Patient may remain asymptomatic and in 90 per cent of specimens they examined the lumen of the right lateral sinus was detected larger than the left. For such inequality, occlusion of the left sinus may not cause the same degree of symptoms as been produced by a thrombus in right lateral sinus.⁸ This study explains why the sign symptoms of LST left in our case produced localized pain with minimum systemic upset.

In literature review non otogenic LST cases are seen more among women and while otogenic LST more in male. This male predominance of otogenic LST is also proved in our case.^{9,10,11,12}

In our case of otogenic LST there is no history of fever which matches with the literatures of

current period.⁴ The reason that lies behind this is easy availability of antibiotics and prevention of development of secondary infection of thrombus. The characteristic “picket fence fever” which was one of the most obvious classical symptom & signs of this intracranial complication has become almost nil in studies of present days.⁴

The LST in our case did not get any chance to develop secondary infection because of prescription of broad spectrum antibiotics both oral and intravenous by all the physicians he has attended. This is obviously a unique achievement of our present era. But the bad thing that was responsible for development of this dreadful complication is use of only antibiotic ear drops available as OTC in the medicine shop without intake of proper systemic antibiotic orally during early days of discharging ear and attempt to clean the discharge by self without attending the proper physician. Thus harboring low grade infection like burning coal within the mastoid bone making the patient to visit series of physicians with persisting pain in and above the Left ear.

He attended the chamber of multiple ENT specialists with pain and discharge from left ear. The diagnosis of LST was the last thing in the mind of all ENT specialists attended because of absence of fever and as he was suffering from safe variety of CSOM with a central perforation in the Tm. The severity of the pain and similarity of its intensity with migraine headache and neuralgic pain compelled us to refer the case to a neurologist whose sharp instinct and advice to evaluate the pain by MRI of brain and MR venogram made the disease finally diagnosed. So, whenever the clinical course of a middle ear infection is highly skeptical, we should not hesitate to do HRCT of temporal bone or MRI and MRV of brain. This matches with all cases of otogenic or non otogenic LST reported in the literature.⁴

Conclusion:

Infection in middle ear even in the safe variety should never be taken lightly as it lies very close to the brain. Anyone who is suffering from middle ear infection should approach the ENT physician for suction clearance of discharge, start a proper antibiotics orally and follow the instructions to make the ear dry. Systemic Antibiotics and eardrops used in middle ear infection should be taken according to the prescribed guideline of the ENT physician. Orogenic LST, though has become a rare entity, can still occur; therefore, keeping a high level of suspicion is very important, especially in developing countries where overenthusiastic medicinal practice by self due to availability of all drugs as OTC in medicine shops may force the clinical course towards a potentially dangerous catastrophe.

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