ORIGINAL RESEARCH PAPER
Volume - 10 | Issue - 04 | April - 2021 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

OTO MASTOIDITIS AND SEPTIC CEREBRAL VENOUS THROMBOSIS

Neurology

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KEYWORDS

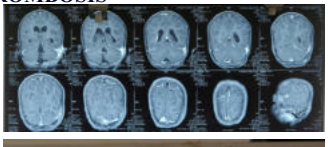
INTRODUCTION

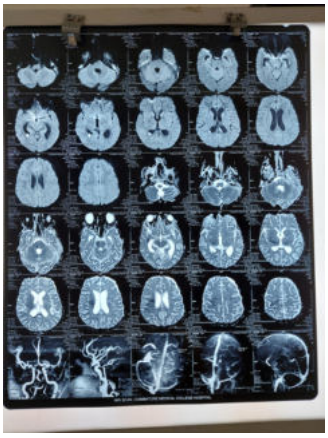
Middle ear infections are common in children, early and appropriate treatment prevents complications. Here we are discussing a case of oto mastoiditis with central nervous system complications.

CASE REPORT

11 yr old female child, admitted with history of fever, left ear pain, swelling behind the left ear of 5 days duration, for which she was treated by a nearby doctor. After 1 week the child had left ear discharge, headache, neck pain, recurrent episodes of vomiting. On general examination she is thin built, febrile, toxic and dehydrated. On local examination she had ear discharge, swelling behind the left ear. On neurological examination, she had neck stifness. Routine blood investigations including, CBC, LFT, RFT were normal. On CSF examination Protein-188 mg%,Sugar- 16 mg%,Cell count-165 cells/cumm,85% were Neutrophils. Aural swab C/S showed growth of Klebsiella sensitive to Amikacin, Ciprofloxacin, Piperacillin / Tazobactum and Cotrimoxazole. ENT opinion was in favour of doing Mastoidectomy. HRCT Temporal bone showed complete opacification of external auditory canal, tympanic cavity and mastoid air cells with a possibility of filling up with pus. MRI BRAIN showed Left mastoid and postauricular abscess, mastoiditis, ventriculitis, venulitis with thrombosis of left transverse and sigmoid sinuses. Patient was treated with parenteral piperacillin tazobactum, Ciprofloxacin, Amikacin, Metronidazole, Mannitol, Dexamethasone and Low molecular weight heparin.Patient improved in 3 weeks.Ear discharge dried up, mastoid abscess subsided, and the child became active and ambulant.

NEUROIMAGING: OTO MASTOIDITIS WITH CEREBRAL VENOUS THROMBOSIS





DISCUSSION:

Ear can be divided into three parts-external,Middle and Inner ear. Middle ear lies within temporal bone. It extends from the tympanic membrane to the lateral wall of the inner ear. The main function of the middle ear is transmitting vibration from the tympanic membrane to the inner ear through the auditory ossicles. Middle ear is divided into - Tympanic cavity and Epitympanic recess.(1)

- Mastoid Antrum is an airspace in the petrous part of the temporal bone communicating posteriorly to the mastoid aircells , anteriorly with the epitympanic recess of the middle ear via the audits to the mastoid antrum.The mastoid air cells is the major contributor to middle ear inflammatory disease.(2)
- Dural venous sinuses are venous channels found between the endosteal and meningeal layers of dura matter in the brain. They receive blood from the cerebral veins,receive cerebrospinal fluid from the subarchnoid space via arachnoid granulations and mainly empty into the Internal jugular vein. The venous sinuses situated in the lateral part includes transverse sinus ,sigmoid sinus and the Internal jugular vein.(3)

Meninges are the three membranes that cover the brain and spinal cord.They are the dura matter,arachnoid matter and pia matter. Cerebrospinal fluid is located in the subarchnoid space between the arachnoid matter and pia matter.The primary function of the meninges is to protect the central nervous system.(3)

The ventricular system of the brain is a set of four interconnected cavities, known as ventricles of brain.Within each ventricle is a region of choroid plexus which produces the circulating cerebrospinal fluid. The ventricular system is continuous with the central canal of the spinal cord with the fourth ventricle allowing for the flow of CSF to circulate. All the ventricular system and central canal of spinal cord are lined by ependymal cells , a specialized form of epithelial cells connected by tight junctions that make up the Blood-CSF barrier.(3)

Acute infection of the middle ear cavity is known as otitis media.It is common in children and is associated with ear pain and discharge.Infection that affects the mastoid bone located behind the ear usually causes infection of the middle ear cavity producing pus filled cysts in the mastoid air cells called mastoiditis.

Meningitis is an acute infection of the protecting membranes of the brain and spinal cord called meninges. The common symptoms are headache, fever and neck stiffness.(4)

Ventriculitis is the inflammation of the ventricles in the brain.It is caused by infection leading to swelling and inflammation.It can cause a wide variety of short term symptoms and long term symptoms ranging from headache and dizziness to unconsciousness and death if not treated early.(5)

Cerebral venous thrombosis is the presence of blood clot in the dural venous sinuses which drain blood from the brain. Symptoms include headache,visual disturbances, seizures,and focal neurological

deficits.(6)

This child had acute suppurative infection of the middle ear, which was not treated properly. She had mastoiditis in the form of swelling, pain, tenderness and warmth behind the ear.She developed headache, intractable vomiting associated with neck stiffness as evidence of meningitis.The child had drowsiness, thunderclap headache,visual disturbances in favour of dural venous sinus thrombosis and ventriculitis. MRI brain revealed evidence of meningitis, ventriculitis and thrombosis of the left transverse and sigmoid sinuses. HRCT of the temporal bone has evidence of mastoiditis with abscess.She was treated with aural toileting, IV antibiotics according to the culture and sensitivity of Klebsiella species. The child was also treated with parenteral dexamethasone and Mannitol for the raised intracranial tension. She was given LMWH for transverse and Sigmoid sinus thrombosis.She showed good improvement in the form of resolution of ear discharge,drying up of the mastoid abscess,and meningeal signs, with improvement in sensorium.The child became active and ambulant after 3 weeks of treatment.Early initiation of appropriate treatment in otitis media associated with CNS complications in children shows good clinical outcome with medical management. (4,5,6,7,8)

CONCLUSION

Early and appropriate treatment of septic cerebral venous thrombosis associated with oto-mastoiditis shows favourable clinical outcome with medical management in children.

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