Sigmoid Sinus Thrombosis In A Child With Unsafe Type Of Chronic Otitis Media – Case Report

Probal Chatterji[1], Yashodeep Mukherjee[2]

[1,2] Teerthankar Mahaveer Medical College and Research Center, Delhi Road, Moradabad, Uttar

Date of submission: 24th February 2024 Date of Acceptance: 19th July 2024 Date of publication: 15th August 2024

Abstract

Introduction: Sigmoid sinus thrombosis, an uncommon condition, is described as a possible intra-cranial complication of both acute & chronic otitis media in standard texts. However, current medical literature mostly describes this condition in relation to acute otitis media. We are reporting a case of sigmoid sinus thrombosis as a complication of chronic otitis media.

Case Report: A 10-year-old male child presented with history of long-standing right sided ear discharge and deafness. His immediate presenting complaints were swelling in the postaural region along with severe ipsilateral headache & fever for the past seven days. On clinical examination, ear findings were suggestive of chronic otitis media with cholesteatoma with mastoiditis. CT scan showed loss of architecture of the mastoid antrum and air cells with destruction of bone of mastoid cortex and complete erosion of sinus plate. MRI with contrast confirmed the presence of sigmoid sinus thrombosis. Patient was initially administered iv antibiotics and then operated. Modified radical mastoidectomy was done along with evacuation of the thrombus from the sigmoid sinus. Patient had a quick and uneventful postoperative recovery.

Conclusion: Sigmoid sinus thrombosis, a rare intra-cranial complication of otitis media, can lead to several other complications including death if left untreated. Early detection and management are crucial for favourable outcome.

Keywords: Chronic Otitis Media, Intracranial complications, Sigmoid sinus thrombosis, Lateral Sinus Thrombophlebitis

Introduction

Otogenic sigmoid sinus thrombosis (SST) is uncommon in the era of antibiotics.[1,2] Only 105 cases have been reported till 2017.1 It is mostly seen in paediatric patients with a history of acute otitis media (AOM) with mastoiditis. [1,2,3] Due to its proximity to the mastoid air cell system, the infection can reach the sigmoid sinus from the mastoid antrum either by direct or by emboli through emissary veins.

The primary treatment of this condition involves administration of intravenous antibiotics with or without anticoagulants. The role of surgical intervention and extent of surgery required is however debatable.[1,2,4]

Access this article online

Website: https://www.nepjol.info/index.php/NJN

DOI: 10.3126/njn.v21i2.63072

HOW TO CITE
Chatterji P, Mukherjee Y. Sigmoid Sinus Thrombosis In A Child With Unsafe Type Of Chronic Otitis Media. NJNS. 2024;22(2):59-60

Address for correspondence:
Yashodeep Mukherjee
Dept of Otorhinolaryngology and head neck surgery
Teerthankar Mahaveer Medical College and Research Center, Delhi Road, Moradabad, Uttar Pradesh-244001
E-mail: ymukherjee2014@gmail.com

ISSN: 1813-1948 (Print), 1813-1956 (Online)

We present a case of otogenic SST in a child with underlying unsafe type of chronic otitis media (COM). Permission was taken from the Institutional Ethics Board and the child's parents prior to publication.

Case Presentation

A 10-year-old male child presented with complaints of severe right-sided headache and low-grade fever accompanied with progressive swelling and pain behind the right ear for duration of seven days. Further enquiry revealed a long-standing history of ipsilateral ear discharge and deafness. Otoscopic findings were consistent with a diagnosis of COM with cholesteatoma. Ipsilateral facial nerve function was intact. There was no evidence of neck rigidity, nystagmus or any other focal neurological signs.

Initially a plain CT scan of temporal bone was advised. It showed middle ear pathology along with extensive destruction of the mastoid antrum and air cell system with breach of the mastoid cortex laterally and complete erosion of the sinus plate posteriorly (Fig 1).

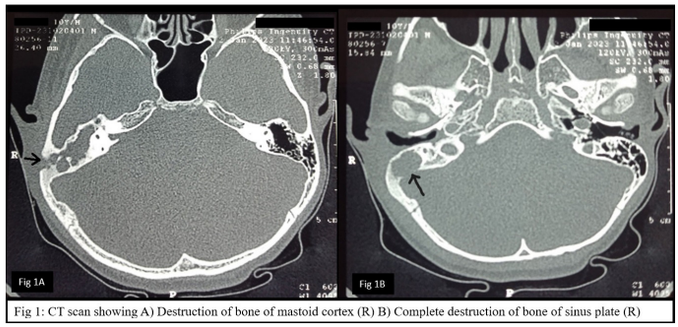

Fig 1: CT scan showing A) Destruction of bone of mastoid cortex (R) B) Complete destruction of bone of sinus plate (R)

Intravenous broad-spectrum antibiotics (ceftriaxone and metronidazole) were started immediately along with paracetamol to control fever and headache. But no clinical improvement was seen over 72 hours.

Due to the persistence of right-sided headache, a contrast enhanced MRI scan of the temporal bone and brain was advised suspecting an intra-cranial complication. It showed mastoid abscess with presence of a large thrombus within the sigmoid sinus extending up to the transverse sinus superiorly and internal jugular vein inferiorly (Fig 2).

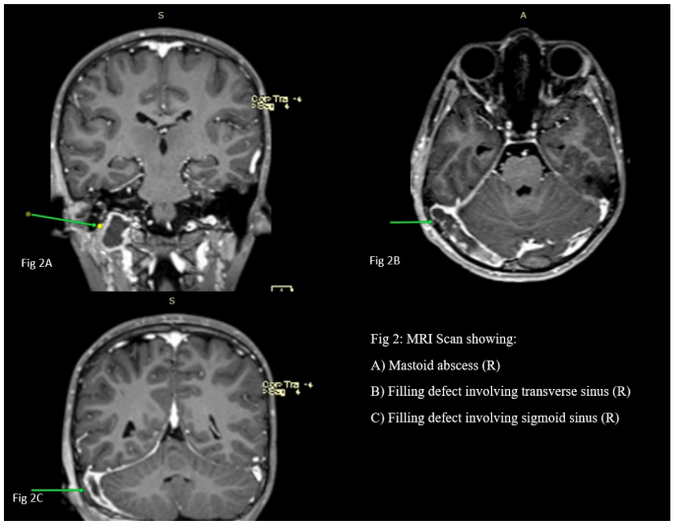

Fig 2: MRI Scan showing:
A) Mastoid abscess (R)
B) Filling defect involving transverse sinus (R)
C) Filling defect involving sigmoid sinus (R)

The parents were immediately counselled for surgery and after obtaining high-risk consent, surgery was done under general anaesthesia through a post-aural approach. Mastoid exploration showed complete absence of bony sinus plate posteriorly and the dura of sigmoid sinus was fully exposed. A wide bore needle aspiration of the sinus yielded a dry tap thus confirming the presence of thrombus within it. The wall of the sinus was opened by an incision and gently probed with blunt tipped instrument. The thrombus was evacuated by suction to achieve free flow of blood from both ends. Bleeding was controlled by packing with Surgicel. A modified radical mastoidectomy was done and the cavity was obliterated using fat and fascia lata harvested from the thigh.

In the post-operative period, there was immediate improvement in the condition of the child. Intravenous antibiotics were continued for five days and patient was subsequently discharged with advice for oral medication. The child had an uneventful recovery with a dry and well-healed mastoid cavity at eight weeks of follow-up.

Discussion

Although standard textbooks mention SST as a possible intra-cranial complication of both AOM & COM,[5] most of the reporting of this condition is in relation to AOM.[1,2,3] Our case had a long-standing history of ear discharge and deafness and therefore it was a sequelae of COM. Although this condition has been documented in a wide range of ages (1-72 years), most cases are seen in the paediatric population. Ropposh[6] and colleagues have observed that the median age of presentation is 11.7 years and patients had ear related complaints for an average of 9.8 days prior to presentation. There appears to be a male preponderance (2:1).[1]

Several organisms have been isolated from patients with SST. In a retrospective study of 109 patients, Streptococcus pneumoniae was the most isolated organism in 33.3% cases.[3] Another study concluded that most cultures yielded mixed flora including beta hemolytic streptococcus, pseudomonas, staphylococcus, enterobacteriaceae etc.[7]

Otogenic SST usually presents with features like earache, fever and severe ipsilateral headache. Other complaints include hearing loss, features of raised ICT like papilledema and isolated cranial nerve palsies (most commonly abducent nerve).[1]

Magnetic Resonance Imaging/Venography is the investigation of choice for diagnosing this condition as well as for follow-up purposes to demonstrate recanalization of the sinus after successful therapy.[1] According to Scherer et al who have reviewed the treatment protocols of over a hundred cases, best results are obtained by combined medical and surgical management.[1] Medical management involves institution of proper antibiotics with or without anticoagulants. Surgical intervention may involve simple mastoidectomy, myringotomy with ventilation tube placement, open thrombectomy, internal jugular vein ligation, ventriculoperitoneal shunt etc according to individual needs. Mercy George et al have however raised concerns regarding anticoagulant therapy.[4] They found that although sinus recanalization was more successful in patients who underwent anticoagulant therapy, the incidence of complications was higher in this group compared to those who did not receive anticoagulation. If left untreated, SST can lead to serious consequences including otitic hydrocephalus, meningitis, intracranial abscesses, involvement of superior sagittal sinus and cavernous sinus with high risk of mortality (20%).[7] Prompt surgical intervention was the need of the hour in our case to prevent these complications. We performed modified radical mastoidectomy which is a time-tested operation for disease clearance in unsafe COM. Since the sigmoid sinus is readily accessible during the surgery, we preferred to evacuate the thrombus in the same sitting with excellent post-operative results.

Conclusion

Otogenic SST is a rare condition which is usually seen in the paediatric population as a complication of AOM with mastoiditis. SST as a complication of COM is rarer still. There are no fixed protocols for the management of this condition due to paucity of cases and lot of debate persists regarding the role of anticoagulation and the need and extent of surgery. If left unchecked, it can lead to other serious intracranial complications with or without focal neurological signs. Early detection via appropriate radiological investigations, institution of an effective broad-spectrum antibiotic as well as timely surgical intervention is necessary for a successful outcome.

References

1. Scherer A, Jea A. Pediatric Otogenic Sigmoid Sinus Thrombosis: Case Report and Literature Reappraisal. Global Pediatric Health. 2017;4. doi:10.1177/2333794X17738837
2. Ulanovski D, Yacobovich J, Kornreich L, Shkalim V, Raveh E. Pediatric otogenic sigmoid sinus thrombosis: 12-Year experience. Int J Pediatr Otorhinolaryngol. 2014 Jun;78(6):930-3. doi: 10.1016/j.ijporl.2014.03.016. Epub 2014 Mar 27.
3. Mattos J.L, Colman K.L, Casselbrant M.L, Chi D.H. Intratemporal and intracranial complications of acute otitis media in a pediatric population. Int J Pediatr Otorhinolaryngol. 2014 Dec;78(12):2161-4. doi: 10.1016/j.ijporl.2014.09.032. Epub 2014 Oct 6.
4. George M, Kolethekkat A.A, Torrigiani E. et al. Management of Otogenic Sigmoid Sinus Thrombosis: A Systematic Review on the Role of Anticoagulation and its Outcome. Indian J Otolaryngol Head Neck Surg (2022). https://doi.org/10.1007/s12070-022-03289-6
5. Minor LB, Poe DS. Glascock-Shambaugh Surgery of the Ear. 6th Ed. Shelton, Connecticut: People's Medical Publishing House; 2010. Chapter 27, Intracranial Complications of Otitis Media; p458.
6. Ropposch T, Nemetz U, Braun EM, Lackner A, Tomazic PV, Walch C. Management of otogenic sigmoid sinus thrombosis. Otol Neurotol. 2011 Sep;32(7):1120-3. doi: 10.1097/MAO.0b013e31822a1ec0. PMID: 21817936.
7. Viswanatha B, Naseeruddin K. Lateral sinus thrombosis in otology: a review. Mediterr J Hematol Infect Dis. 2010 Sep 7;2(3):e2010027. doi: 10.4084/MJHID.2010.027. PMID: 21415979; PMCID: PMC3033149