Internal jugular vein thrombosis in a case of attico antral disease – a rare presentation in this modern antibiotic era

K. R. V. Sakthikumar · Sanjeev Mohanty · A. Ravikumar · N. S. Thirumaran

Abstract We report a case of Internal Jugular Vein Thrombosis with a long segment thrombus in a clinical setting of attico antral type of Chronic Suppurative Otitis Media (CSOM) in a 20 year male. He presented with hectic rise of temperature with chills & rigor of 7 days duration associated with left ear discharge & throbbing headache of 10 days duration. ENT examination revealed attico antral type of Chronic suppurative Otitis Media with sinus thrombophlebitis. Further investigations revealed a mural thrombus extending from the lower part of Internal Jugular Vein (IJV) till the Torcula Herophili. Left Modified radical mastoidectomy with exposure of transverse & sigmoid sinus was done to completely eradicate the disease and source of infection. The patient was treated with oral anticoagulants and parenteral antibiotics based on the sensitivity report and became asymptomatic after 8 weeks.

Keywords Internal Jugular Vein Thrombosis · Lateral Sinus Thrombosis · Sigmoid Sinus Thrombosis · Transverse Sinus Thrombosis · Chronic Suppurative Otitis Media · CSOM · Intracranial complication of CSOM · IJV thrombosis

Case report

A 20-year male presented with hectic rise of temperature with chills & rigor of 7 days duration associated with Left ear discharge which was scanty, purulent, foul smelling with occasional blood stains & throbbing headache of 10 days duration. He also gave a history difficulty in hearing for the past 10 years. There were no other medical illnesses. On admission he was anemic, had a systolic murmur, carotid bruit, and on observation had a “picket-fence” fever pattern. Left ear Examination revealed granulations in attic. foul smelling scanty discharge and a firm 5 × 1 cm chord like structure in the neck anterior to left Sternocleidomastoid muscle, Tender (L) IJV. Griesinger’s sign was Positive with Grade II nystagmus. Tuning fork test showed a conductive deafness more on the left ear. Investigations revealed that he was anemic with a hemoglobin of 6.4g/dL, TC 9100, DC – P 80 L 19 E 1 Aural swab for C/S grew *Pseudomonas* which was sensitive to Ciprofloxacin. Ceftriaxone. Gentamycin The pure tone audiogram Right – minimal to mild conductive Hearing loss, Left – moderate conductive Hearing loss. CT Brain, Temporal bone & Neck showed a Left IJV thrombosis along with Left sigmoid sinus thrombosis. Doppler of IJV showed a mural thrombus and a Normal Right IJV. MR Venogram revealed a venous thrombosis of Left transverse sinus. sigmoid sinus & IJV, segment of Right transverse sinus. There was also a Small lacunar infarct in Right basal ganglia & Left cerebellar hemisphere.

Physician, Cardiologist, Vascular surgeon, Neurosurgeon, Neurophysician, Ophthalmologist. Interventional radiologist opinions were sought.

The patient was transfused with 3 units of blood, IV antibiotics which included Ciprofloxacin X 3 days, Ceftriaxone X 15 days, Metronidazole X 12 days, Gentamycin ear drops X 9 days. Left Modified radical mastoidectomy under GA with exposure of left transverse & sigmoid sinus was done.

Modified radical mastoidectomy revealed granulations in attic, antrum & mastoid tip. extending into retrofacial,

K. R. V. Sakthikumar · S. Mohanty · A. Ravikumar ·
N. S. Thirumaran
Department of Otorhinolaryngology-Head and Neck Surgery,
Sri Ramachandra Medical College & Research Institute,
Porur, Chennai - 600 116,
Tamil Nadu, India

S. Mohanty (✉)
e-mail: drsanjeevmohanty@yahoo.com
Ph: +91 / 44 / 55465150
Mobile: +91 / 9840131091
Fax: +91 / 44 / 24767008, 24769039

perilabyrinthine & perisinus cells & around the sino-dural angle. There was breach of dural plate superiorly and 3 ml of pus evacuated extradurally. Left sigmoid sinus was skeletonized and granulations removed from the wall of sigmoid sinus. Ossicles were found to be eroded.

Fig. 1 Doppler of left IJV showing a mural thrombus (arrow)

Fig. 2 Pre op MR venogram showing venous thrombosis of left transverse sinus, sigmoid sinus and Internal jugular vein

Post operatively the patient was administered oral antibiotics for 6 weeks, Heparin 5000 units S/C BD x 1 week, and then Tab. Warfarin 2.5 mg OD X 6 weeks, INR every 2 weeks. Patient was Asymptomatic in 8 weeks. The Repeat MR venogram & Doppler revealed a Resolving thrombus & establishment of intraluminal collateral blood flow.

Discussion

Internal Jugular vein thrombosis occurs in continuity with the lateral sinus thrombophlebitis as an intracranial complication of long standing attico antral type of chronic suppurative otitis media [3]. Lateral sinus thrombophlebitis accounts for approximately 20 percent of intracranial complications of Suppurative otitis media [2]. Initially the process is always preceded by the development of extra dural perisinus abscess. Usually, mastoiditis is the initial complication resulting from bony erosion.

Petrositis is typically seen in the presence of mastoiditis. Petrositis and Bone erosion forms a Mural thrombus which can extend from jugular vein till the Torcular herophili. Infections with *Streptococcus pneumoniae*, nontypable *Haemophilus influenza*, and *Moraxella catarrhalis* are the most common causes of acute suppurative otitis media. *Haemophilus influenza* type B is a major etiological agent in cases of otitis media associated meningitis. Mastoiditis associated with suppurative otitis media is usually associated with *Bacteroides*. Anaerobic organisms have been shown to play a role by creating good environments for other more invasive organisms and by inactivating antibiotics [1]. In our case the aural swab grew *Pseudomonas aeruginosa*, an unusual bacterial flora for IJV thrombosis. Culture proved sensitive to Ciprofloxacin, Ceftriaxone and Gentamycin.

MR angiography is quite sensitive to blood flow and distinguishes thrombosis from slow flow. It has several advantages: it is a non-invasive technique and does not require the use of intravenous contrast agent. it can be performed rapidly and does not use ionizing radiation. MR angiography can help detecting thrombosis of the superior sagittal and cavernous sinuses. In our case the thrombosis was found to extend from the lower part of the internal jugular vein involving the jugular bulb, sigmoid sinus, transverse sinus till the torcula Herophili. The treatment is to surgically expose the diseased dura and remove the excess granulation tissue. If septic emboli are present, it may require sigmoid sinus decompression or ligation of the internal jugular vein to avoid further embolization of the tissue. Alternative forms of treatment include anticoagulation therapy and IV antibiotics. However anticoagulation is not usually recommended as it can be associated with spreading septic emboli or hemorrhage [1]. In our case we did a Left Modified radical mastoidectomy with exposure of left transverse & sigmoid sinus to completely eradicate the disease and source of infection, followed by a course of oral anticoagulants and an-

Fig. 3 Post op Doppler of Left IJV showing resolving thrombus (arrow)

Fig. 4 Post op MR venogram showing establishment of intraluminal collateral blood flow

tibiotics as per sensitivity report. The importance of ligating the IJV remains controversial. It has been reported that the jugular vein should be ligated in the course of the surgery if thrombosis is covered at operation [6]. Teichgraber et al [5], have agreed that this was unnecessary in all cases as it

considerably increases the mortality and morbidity of the procedure and ligation should be reserved for those cases in which thrombophlebitic or embolic spread beyond the sinus is found.

Conclusion

Since the introduction of antibiotic therapy, the incidence of complications of Otitis media has fallen from 3 to 0.15 percent [3]. The mortality associated with intracranial complications from otitic disease has decreased. Complications, especially intracranial, of otitis media are much rarer in this modern antibiotic era. However, the morbidity and mortality rates remain high, especially in the case of intracranial involvement. The modality of treatment in intracranial complication such as thrombosis of IJV extending up to the Torcula Herophili is to treat the disease by performing mastoidectomy to completely eradicate the source of infection along with IV antibiotics which are continued post operatively for 6–12 weeks. In addition, an unusual organism causing this complication may emphasize the fact that a culture report is mandatory in managing such patients. The signs and symptoms can be so subtle that they may make the diagnosis difficult. Therefore, the clinician treating otitis media must always have a high index of suspicion in order not to miss a critical diagnosis [1]. This case is reported for its rarity in this modern antibiotic era and to highlight the options in management of such complications.

References

1. Karen L, Stierman. MD, Jeffrey T, Vrabec MD (1998) Complications of Otitis Media, Department of Otolaryngology, UTMB, Grand Rounds
2. Kangsanarak J (1993) Extracranial & intracranial complications of suppurative otitis media. *J laryngol otol* 107(11): 999–1004
3. Kelly KE, Jackler RK, Dillon WP (1991) Diagnosis of septic sigmoid sinus thrombosis with magnetic resonance imaging. *Otolaryngol Head Neck Surg* 105(4):617–624
4. Tovi CT (1991) Diagnosis of LST. *Ann Otol Rhino Laryngol* 100(1):79–81
5. Teichgraber JF (1982) LST: a modern perspective *laryngoscope* 92(7pt1):744–751
6. Kimmick H (1958) Lateral Sinus Thrombosis. *Arch otolaryngol* 62:156–159