Unusual presentation of more common disease/injury

Subdural empyema in chronic suppurative otitis media: a rarely encountered complication

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Correspondence to Dr Monica Gupta, monicamanish2001@gmail.com**Summary**

Here the authors describe the case of a 23-year-old young woman with life-threatening focal suppurative intracranial collection with brain compression secondary to long forgotten chronic suppurative otitis media. With the development and availability of broad-spectrum antibiotics and their timely usage, cases of suppurative otitis media are a rarity in the current times.

BACKGROUND

Subdural empyema or abscess is a rare but a serious intracranial infection.¹ It is a focal purulent collection in between the dura mater and the arachnoid membrane. It is an unusual but life-threatening complication of many less intimidating conditions like paranasal sinusitis, otitis media and mastoiditis in adults.² Here we report an interesting case of subdural empyema as a result of chronic suppurative otitis media (CSOM).

CASE PRESENTATION

A 23-year-old woman was admitted with a 1-month history of intermittent high-grade fever and gradually progressive headache. One day before admission, she had projectile vomiting followed by two episodes of generalised tonic-clonic seizures. Apparently, she had a history of left-sided CSOM since the age of 5 which remained ignored by her parents.

Examination revealed a toxic, pale and febrile patient. She was drowsy and disoriented. She had evidence of meningeal irritation in the form of neck rigidity, positive Kernig's and Brudzinski's signs. Clinical findings also demonstrated right-sided hemiparesis, left third cranial nerve palsy (dilated pupil) and positive Babinski's sign. Fundus examination showed papilloedema. Otological examination demonstrated left-sided CSOM, attic-antral disease with cholesteatoma and left facial nerve palsy and right-sided CSOM, tubotympanic disease.

Considering the history of CSOM, clinical possibilities of brain abscess, transverse sinus thrombosis and subacute pyogenic meningitis with focal vasculitis were entertained.

INVESTIGATIONS

On investigation, patient was found to have haemoglobin of 7.7 g/dl, total leucocyte count ($19\,000/\text{mm}^3$) showed neutrophilic leucocytosis (93% neutrophils on the differential count) and a normal platelet count. The erythrocyte sedimentation rate was 44 mm in first hour. The renal function tests and serum electrolytes were within normal limits. A non-contrast CT (NCCT) head revealed left-sided fronto-

temporal isodense collection over left hemisphere suggestive of subdural collection with a significant midline shift (figure 1). High-resolution CT of temporal bone illustrated bilateral CSOM, mastoiditis and erosion of all ossicles and tegmen tympani of the left ear (figure 2). Audiometry showed severe and moderate conductive hearing loss in left and right ears, respectively.

DIFFERENTIAL DIAGNOSIS

A final diagnosis of left-sided CSOM, mastoiditis, facial palsy and left subdural empyema (intracranial) along with right CSOM with mastoiditis was made.

Figure 1 Preoperative NCCT head showing left subdural collection with cerebral midline shift.

Figure 2 High-resolution CT temporal bone shows destroyed ossicles and mastoiditis.

TREATMENT

Immediate neurosurgical drainage of the subdural empyema was carried out by stereotactic burr hole placement with evacuation of the pus and irrigation. Gram staining and culture of the pus revealed *Pseudomonas aeruginosa*. However, before the antibiotic sensitivity reports, patient was started on empirical antibiotics ceftazidime, metronidazole and vancomycin. Other supportive treatments in the form of mannitol for the increased intracranial pressure and antiepileptics for seizures were commenced simultaneously. Close monitoring of the patient's clinical status was done. Patient showed signs of recovery in the immediate postoperative period which was confirmed on the NCCT brain showing decreased compression of the brain and resolution of the subdural collection (figure 3). After 2 weeks of parenteral antibiotic therapy, the primary focus was debrided by performing left modified radical mastoidectomy. Postoperatively, she was continued on antibiotics for another 4 weeks.

OUTCOME AND FOLLOW-UP

There was no recurrence of subdural empyema during the hospital stay or upon discharge. Patient was continued on antiepileptics for 6 weeks following which they were tapered slowly and stopped with no seizure recurrence in the follow-up. Patient had residual neurological deficit in the form of conductive hearing loss of the left ear and residual left facial palsy for which she is undergoing rehabilitation.

DISCUSSION

CSOM is known to cause a gamut of complications which can make the disease grim and life threatening. Complications of otitis media either acute or chronic occur when the infective process spreads beyond the confines of the middle ear. A suppurative process in the ear has access to the central nervous system by direct extension through bone, by either cholesteatoma or chronic osteomyelitis, through spread by thrombosis of small venules from the dura, transverse sinus and beyond; and through preformed

Figure 3 Postoperative NCCT head showing resolution of left subdural collection.

pathways, such as labyrinth, the endolymphatic channels and developmental or traumatic bony defects.²

Subdural empyema is a rarely encountered presentation of CSOM. In a retrospective study carried out by Penido Nde *et al*,³ 15 years data were analysed for intracranial complications of otitis media.³ The authors found that the majority of the complicated cases presented with otogenic brain abscess, meningitis or lateral sinus thrombosis and subdural empyema accounted for only 3.6% of the complications. However, more than one intracranial complication may be present at any one time. In another review of analysis of 32 cases of subdural empyema by Dill *et al*,⁴ not a single case secondary to otitis media was identified; majority of the patients had sinusitis or trauma of neurosurgical origin.⁴

Medical treatment alone is not adequate in treating subdural empyema as the loculations need to be drained to prevent chronic suppuration.⁵ Reported mortality is 21–35% and morbidity is about 20%. Early diagnosis, prompt surgical intervention with long-term antibiotic therapy and eradication of primary source are mandatory for complete recovery as in our case.⁶

Learning points

- ▶ CSOM, especially the attico-antral disease, needs to be treated aggressively to avert complications at a later date.
- ▶ Patients presenting with acute meningismus should be thoroughly examined for hidden sinus or ear disease.
- ▶ Physicians should be alert to the entity of subdural empyema as a possibility in young unconscious febrile patients and resort to early radiography of the brain, probably even before a lumbar puncture.

Competing interests None.

Patient consent Obtained.

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