

Silent Otitis Media Presenting as Subperiosteal Abscess- A Case Report

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ABSTRACT

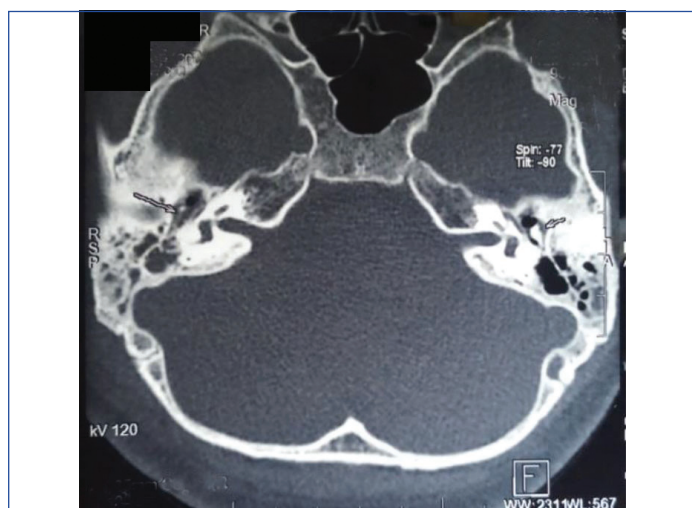
Otitis media is an inflammation of mucoperiosteal layer of the middle ear cleft which occurs mostly due to eustachian tube dysfunction superadded with an infective aetiology. It is said that younger children are more commonly affected due to the anatomical difference of eustachian tube in children from an adult, but adults are affected as well. Usually acute otitis media may settle following a course of antibiotics, however, it can lead to persistence of infection or becoming chronic and may lead to severe intra and extracranial complications. This report is of a 16-year-old male who presented with a painful swelling in right postauricular region for two weeks duration. The right ear had a diffuse swelling of size 6×1×5 cm in the postauricular region, tender on palpation, firm in consistency, and was fluctuant. Otoscopic examination of the right ear showed bulge out and intact tympanic membrane without active discharge and congestion. High Resolution Computed Tomography (HRCT) of temporal bone showed right otomastoiditis with erosion of the lateral cortex of the right mastoid. He underwent right cortical mastoidectomy under general anaesthesia. The patient was on follow-up for six months and no recurrence was noted.

Keywords: Cortical mastoidectomy, Mastoiditis, Myringotomy otitis media, Subperiosteal abscess

CASE REPORT

A 16-year-old male presented with a painful swelling over the right postauricular region for two weeks duration. He had no history of hard hearing, fever, or Upper Respiratory Tract Infection (URTI). Local examination of the right ear revealed a swelling of size 6×1 cm in the right postauricular region, diffuse, tender on palpation, firm in consistency, and fluctuant. Otoscopic examination showed a bulged out and intact tympanic membrane without active discharge or congestion. The tuning fork test appeared to be normal. Examination of the opposite ear, nose and throat were found to be normal. The patient was diagnosed with right subperiosteal abscess clinically.

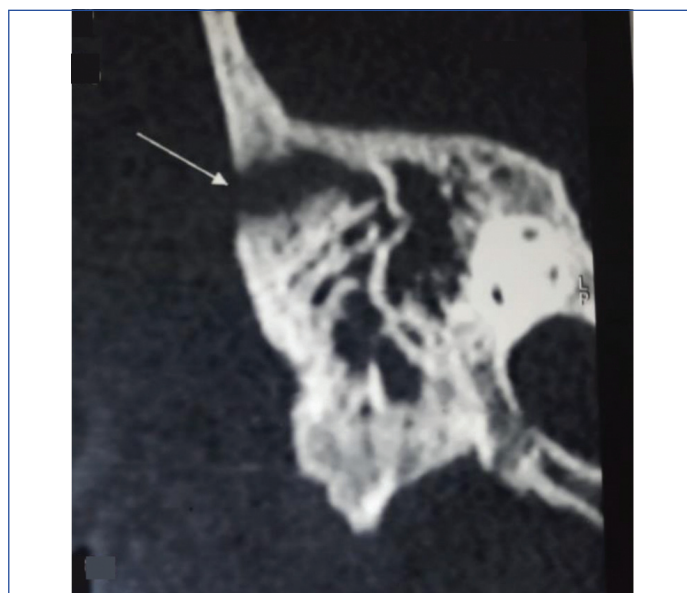
Pure tone audiometry revealed 26.6 Decibels Hearing Level (dB HL) in the right ear and 28.3 dB HL in the left ear. HRCT temporal bone showed right otomastoiditis [Table/Fig-1], with an erosion of the lateral cortex of the right mastoid with overlying soft tissue abscess measuring 6×1×5 cms [Table/Fig-2,3]. There was no evidence of erosion of the tegmen tympani, scutum, or lateral semicircular canal and ossicles. There was no evidence of extracranial, intracranial extension or dural sinus thrombosis. Right subperiosteal abscess was diagnosed radiologically.



[Table/Fig-1]: HRCT showing right otomastoiditis.

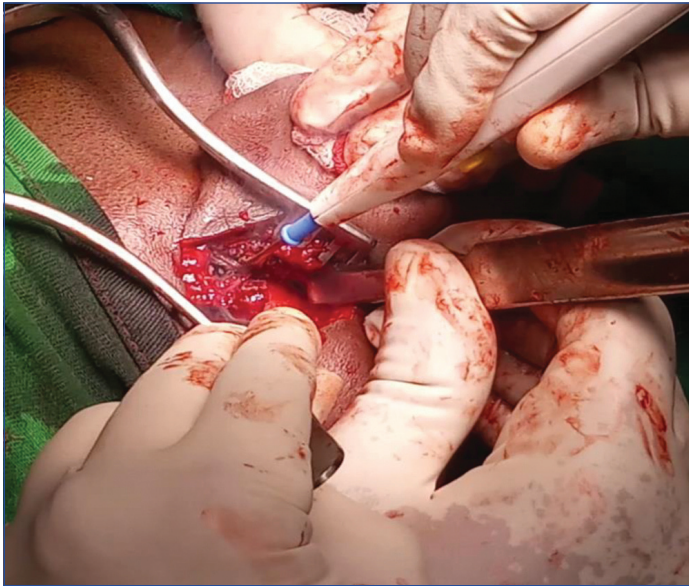


[Table/Fig-2]: HRCT showing subperiosteal collection (arrow).



[Table/Fig-3]: HRCT showing erosion of right mastoid cortex (arrow).

He was given Intravenous (i.v.) antibiotics for a day, and was taken up for surgery the following day. He underwent right cortical mastoidectomy, under general anaesthesia. William Wilde's postauricular incision was made on the right side. About 3 mL of pus was drained from the postauricular region adjacent to the mastoid cortex, which was sent for culture and sensitivity testing. A 6x1x5 cms soft tissue swelling was seen in the right postauricular region, which was excised and sent for histopathological examination [Table/Fig-4]. The periosteum was elevated, linea temporalis and spine of Henle exposed and Cortical Mastoidectomy was done. Mastoid antrum was exenterated, and glue-like secretion was suctioned out. Myringotomy was done in anteroinferior quadrant and glue-like secretion was suctioned out from the middle ear cavity. Tympanomeatal flap was elevated, malleus and incus appeared to be intact. Haemostasis was maintained throughout the procedure. Sterile mastoid dressing was done.



[Table/Fig-4]: Intraoperative image showing soft tissue overlying mastoid being dissected.

Postoperative period was uneventful. Pus for culture sensitivity reported presence of *Hemophilus influenzae*, and Augmentin was given intravenously based on culture sensitivity report. Facial nerve functions were intact. Histopathology was reported as inflammatory granulation tissue. Sutures were removed on postoperative day seven. The wound remained healthy, ear kept discharging for 10 days. Perforation healed after six weeks, postoperatively. The patient was kept on regular monthly follow-up and no further recurrences were noted.

DISCUSSION

Acute otitis media is one of the most common conditions seen in clinical practice, especially occurring in paediatric age group as it occurs between age 6 and 18 months as a result of a viral upper respiratory infection or eustachian tube dysfunction due to the anatomical position in childhood. The chances of acute otitis media declines as the age progresses and resolves without neurological and otological complications. According to Venekamp RP et al., ear pain is one of the striking features seen in acute otitis media. New onset of ear discharge and fever can also occur. A red, bulging tympanic membrane is one of the salient features seen on an otoscopic examination, with or without ear discharge which could occur following a spontaneous tympanic membrane rupture in acute otitis media [1]. If the disease progresses to a duration of 12 weeks or more, then it becomes chronic. Clinically, the patient can present with otalgia, fever, and hard of hearing. As the condition advances, the patient may complain of ear discharge which indicates the tympanic membrane would have been perforated to let out the secretion within the middle ear cavity [1,2].

Cassano P et al., have described mastoid involvement followed by a middle ear infection as more common among paediatric age group

due to certain anatomical, immunological and infectious factors [3]. There is more pneumatization of the mastoid bone with thin bone trabeculae with a smaller aditus ad antrum in children than in an adult, thereby increasing the chances of accumulation of secretion and osteitic infection. Immune system is immature at the paediatric age and development of resistance following non selective antibiotic therapies are more commonly seen among children [2]. On the contrary, Ren Y et al., have stated that the complications following acute otitis media are more commonly seen in adults when compared to children. Following three reasons were given, of which firstly, the author described children were treated immediately when they had developed a URTI, thereby reducing disease severity and rate of complications. Secondly, paediatric age group was mostly commonly vaccinated with 7-valent pneumococcal conjugate vaccine. Finally, risk factors such as diabetes, chronic otitis media, and cholesteatoma among adults may upsurge the chances of otogenic complications [2,4]. Early identification is necessary to evaluate the status of the disease and to prevent the development of complications.

Mastoiditis is one of the most common problems that come to pass following an otitis media. Clinically it presents as retroauricular swelling with pain, due to the collection of mucopurulent secretions in the mastoid cavity that occurs as a result of blockage at the aditus and antrum [3]. If this persists, it may cause necrosis in the mastoid cortex leading to a subperiosteal abscess. The abscess appears fluctuant and displaces the pinna outward and downward causing obliterated post auricular sulcus. If the infection spreads inferiorly along the sternocleidomastoid muscle, it forms Bezold's abscess. Spread of infection to the root of zygoma leads to the formation of zygomatic or Luc's abscess. If the infection passes along the posterior belly of digastric muscle, it is called Citelli's abscess. Labyrinthitis and petrositis may occur following a medial spread [3]. Ghadersohi S et al., found that subperiosteal abscess was the most common complication arising following acute mastoiditis, and *Streptococcus pneumoniae* is the most common causative organism [5].

Examination findings can be aided by investigations such as X-Ray mastoids, pure tone audiometry, and HRCT of temporal bone. Pure tone audiometry may show conductive hearing loss due to accumulation of discharge within the middle ear cavity. Sensorineural hearing loss can occur if structures in the inner ear are involved. The HRCT temporal bone shows the bony contour of the mastoid cavity and is useful to rule out underlying cholesteatoma or intracranial complications [6].

Acute presentation of the disease can be conservatively managed with antibiotics. Antibiotic therapy has a major role in controlling and, to a certain extent, may help in preventing complications of otitis media. Conservative management fails due to improper antibiotic therapy or resistance of the causative organism. Kucur C et al., had suggested that even after antibiotic therapy and surgical approach, it may not necessarily prevent the chance of occurrence of complications, either due to drug resistance or any underlying disease [7]. According to Shavit SS et al., the necessity for surgical intervention can be decided based on clinical and laboratory findings and response to preliminary antibiotic therapy [8]. If there is persistence of mucopurulent secretions in the middle ear cavity, myringotomy is required along with a ventilation tube. This will facilitate the drainage of the fluid and helps in the aeration of the middle ear cavity. Cortical mastoidectomy is indicated when otitis media presents with complications which will help visualise the mastoid cavity and clear the diseased tissues. In case of a subperiosteal abscess, aspirated pus should be sent for culture and sensitivity to avail proper antibiotic therapy. Krishnan M et al., concluded radiological assessment along with effective medical treatment with broad-spectrum intravenous antibiotics and surgical intervention are essential for a good clinical outcome [9].

In this case, the patient had no history of ear pain, no hearing loss and on otoscopic examination, there was a bulged out tympanic membrane without any congestion. There was no evidence of acute otitis media, yet the patient presented with a postauricular abscess. Middle ear secretions were detected only during the intraoperative period. Hence, the presentation of the patient is quite unusual when compared with those reported in literature. The patient was treated immediately and efficiently, hence, no recurrence was reported during the follow-up visits.

CONCLUSION(S)

Acute otitis media can be identified and diagnosed clinically. Recurrence and progression of the disease may lead to the spread of the disease and complications. Recognising the signs and symptoms at the earliest will help in ceasing the spread of the condition and speeds up recovery.

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