Petrositis Following Chronic Otitis Media without Gradenigo's, Treated without Surgery

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INTRODUCTION

Petrositis is a rare complication of chronic otitis media. It is known to cause variety of intratemporal and intracranial complications, if not managed timely. Traditionally, surgery was advocated, but with better antibiotics availability, focus is now more on conservative treatment.

We hereby present a rare case of petrositis, without full triad of Gradenigo's syndrome and being managed by intravenous antibiotic only. This highlights importance of early diagnosis and treatment.

PRESENTATION OF CASE

A 19-year-old male presented with discharge from left ear and left sided headache, (becoming holocranial) for 2 years, with increased severity since a month. Discharge was scanty and yellowish; blood tinged occasionally and was often foul smelling. The headache was insidious, gradually worsening, aggravated by cold food intake and exposure to cold weather. He also gave history of mild hearing loss from left ear. There was history of some improvement with oral antibiotics, prescribed by local practitioners, but the relief was incomplete and lasted shortly. He had no complain of trauma to head or ear, double vision, vomiting, fever or facial weakness.

Physical examination was normal especially with respect to extra ocular muscles (Fig.1) and muscles of facial expression.

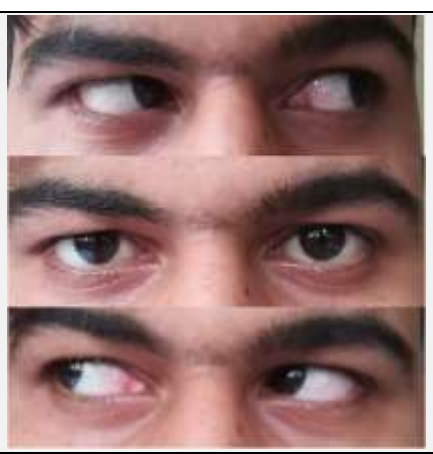

Figure 1. Normal Extra Ocular Movement

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Examination of the left ear revealed pinna and external auditory canal to be normal. Mastoid tenderness was present. There was perforation in anterior aspect of tympanic membrane with granulations on the posterosuperior quadrant and adjoining external auditory canal, which were teased with suction under microscope. Tuning fork tests were done. It revealed Rinne's test to be negative and Weber's test lateralised to the right ear. Pure tone audiometry (PTA) showed mild sensorineural hearing loss of left ear (Fig 2).

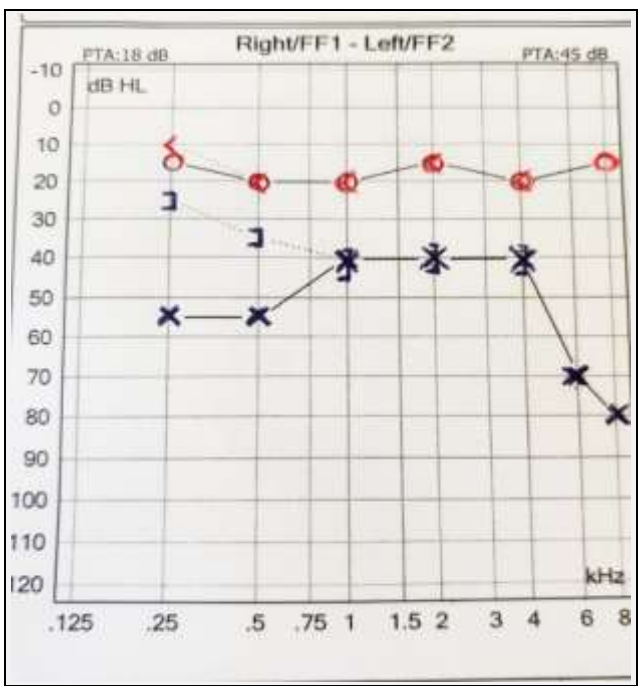

Figure 2. Pure Tone Audiometry (PTA) Showing Mild Sensorineural Hearing Loss of Left Ear

CLINICAL DIAGNOSIS

Chronic otitis media was made.

DIFFERENTIAL DIAGNOSIS

Sigmoid sinus thrombosis, meningitis, labyrinthitis, neoplasia.

PATHOLOGICAL DISCUSSION

The petrous apex part of temporal bone at skull base may be filled with air, contains marrow or is sclerotic (under developed). Only 30 percent of the petrous apices are filled with air or pneumatised.[1,2] Petrositis is the extension of infection from mastoid air cells into the anterior or posterior pneumatized petrous apex. Before introduction of antibiotics, petrositis was a fatal complication of otitis media. If unrecognized and under-treated, it can lead to complications like meningitis, extradural or intracranial abscesses, cranial nerve palsies, venous sinus thrombosis, subdural empyema, labyrinthitis and sometimes death.[3] A thin dura mater separates trigeminal ganglion and sixth cranial nerve from bony petrous apex. Hence, they are vulnerable to any inflammatory processes there causing deep retro-orbital pain and lateral rectus palsy.[4]

Giuseppe Gradenigo described a triad of retro orbital pain, paralysis of the sixth cranial nerve and persistent otorrhea.[5] Hence, the syndrome is known as Gradenigo's syndrome. Due to the advent of antibiotics, very few complete triads can be found these days. Here, a rare case of petrositis complicated by chronic otitis media of a 19-year-old male is presented.

Petrositis is a rare complication of otitis media. And further rare are those presenting with triad of Gradenigo's syndrome (retro-orbital pain, abducens nerve palsy and persistent otorrhea) due to advent of antibiotics.

In literature, only around 48 publications are present in otorhinolaryngology. Gradenigo's syndrome was first described in 1904 by Giuseppe Gradenigo.[5] It was commonly associated with acute otitis media, with few cases reported in chronic otitis media and with cholesteatoma.[6,7]

Most cases of petrous apicitis occur in well-developed air cell systems extending into the petrous apex.[1,2] Review of previously published case reports of Gradenigo's syndrome have shown that between one week to three months is the usual time course to develop sixth (abducens) cranial nerve palsy from the onset of acute otitis media (AOM).[6,7] This is not surprising, since the petrous apex is the summit of the pyramid-shaped petrosum, of which the middle ear and the mastoid form the base. The inflammatory process spreads from the base to the top of the pyramid, extending along the strings of pneumatized cells from the mastoid towards the petrous apex.[8] However, when chronic suppurative otitis media (CSOM) is present in Gradenigo's syndrome, sixth (abducens) cranial nerve palsy may develop up to three years later.[6]

In addition to the triad symptoms of Gradenigo syndrome, petrous apicitis has different type of presentations like ipsilateral facial paralysis due to 7th cranial nerve affection, defective cranial nerves VIII, IX, and X are found, along with vertigo and sensorineural hearing loss due to result of labyrinthine involvement of the inner ear.[4] In our case also, mild sensorineural hearing loss at the time of presentation suggested labyrinthitis. In Gradenigo's original case series of 57 patients, more than half of the cases did not followed the classical triad.[5]

Enhancing the drainage and giving prolonged intravenous antibiotics is the established line of treatment, for petrositis.[2] Most authors advocate surgery, due to potentially fatal complications, if left untreated. Chole and Donald stated that aggressive surgical drainage is indicated when petrous apicitis is diagnosed.[2] Watkyn-Thomas reported that petrositis is curable by adequate mastoid operation.[9] Hendersot presented a middle fossa approach for the treatment of petrous apicitis.[10]

But, due to complex anatomy of the region and difficulty to work around labyrinth and carotid vessel, the complete excision of petrous apex air cells is impossible. Thus, when recent reports advocated conservative therapy with high-dose broad-spectrum antibiotics and less aggressive surgical

procedures, it became first choice.[4] Indeed, five cases among 48 reviewed from the English-language literature were treated without surgery.[11] In a case reported by Scardapane, complete relief of symptoms and radiological changes were documented within 7 weeks.[12] In our case also good relief was achieved by giving broad spectrum, high dose intravenous antibiotics for 21 days, without the need for surgical intervention.

DISCUSSION OF MANAGEMENT

Patient was admitted under the Department of ENT and head and neck surgery for further evaluation and management. Total leukocyte count was 8450/dL with lymphocytic predominance. Ear swab sent for pus culture reported sterile after 48 hours. Intravenous antibiotics with daily Inj. ceftriaxone 1 gm twice, Inj. amikacin 500 mg thrice and Inj. metronidazole 500 mg thrice were started, along with round the clock analgesics. Also, daily examination under microscope with middle ear lavage with ciprofloxacin ear drops, through the perforation was carried out. The treatment was given for 3 days but there was no relief in ear discharge. High resolution computed tomogram (HRCT) of temporal bone was asked for. It revealed mild soft tissue thickening with mild overlying bony irregularity. (Fig. 3)

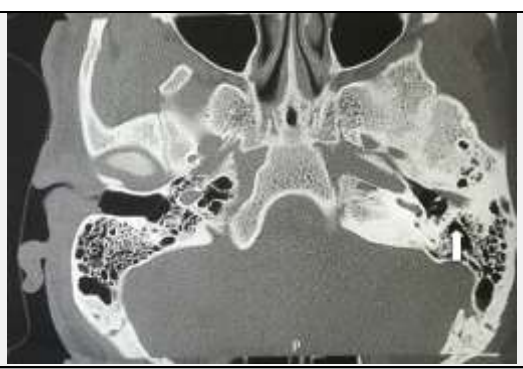

Figure 3. HRCT of Temporal Bone Revealing Mild Soft Tissue Thickening with Mild Overlying Bony Irregularity

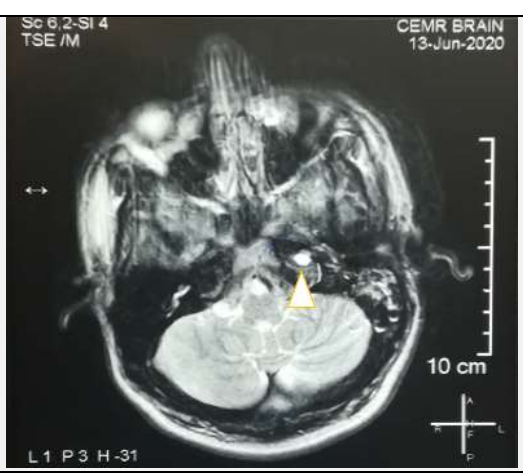

Figure 3. CE-MRI Brain Revealing Left Otitis Media with Hyperintensity in Left Petrous Apex on T2 FLAIR

Despite intravenous injections for 7 days, patient only had mild relief in pain, though discharge reduced. Due to persistent headache, contrast enhanced-magnetic resonance imaging (CE-MRI) of brain was planned. It revealed left otitis media with hyperintensity in left petrous apex on T2 FLAIR (Fig. 4).

He was started on double dose Inj ceftriaxone i.e. 2 gm twice daily intravenously, the other drugs remaining same. The patient had improvement with reduction of headaches. Patient was treated with a 21-day course of intravenous antibiotics and other supportive measures and was discharged with complete resolution of symptoms. After 2 months of follow up, there was no recurrence of symptoms and thus, cautery patching was done to heal the dry small perforation (Fig. 5), with good result, but with no hearing improvement.

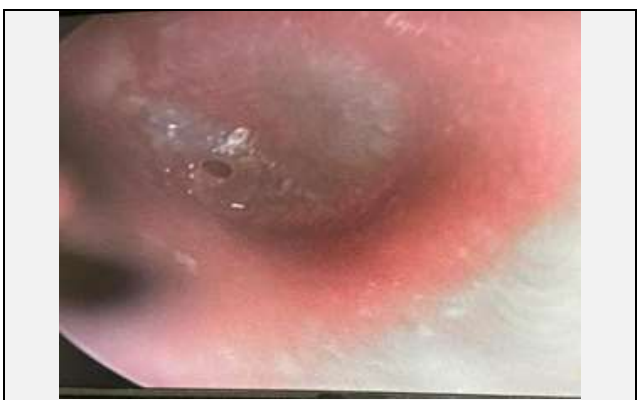

Figure 5. Dry Small Perforation on Follow-up

FINAL DIAGNOSIS

Left sided petrositis, following chronic otitis media without Gradenigo's syndrome. The complete triad of persistent otorrhea, abducens nerve palsy and retro-orbital pain need not always be present in all cases. In our patient, the major complaint was holocranial headache with ear discharge. Petrositis may be suspected even in partial presentation like this case. If undiagnosed or under treated, it can lead to complications like meningitis or cranial nerve palsies.

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