

Parapharyngeal And Retropharyngeal Space Abscess: An Unusual Complication Of Chronic Suppurative Otitis Media

Rijuneeta, P Kumar Parida, S Bhagat

Citation

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Abstract

Parapharyngeal and retropharyngeal abscess as a complication of cholesteatoma is an uncommon entity. We present the unusual case of a 32 year old man with chronic suppurative otitis media, presenting with parapharyngeal and retropharyngeal abscess. This was treated with incision and drainage of the abscess followed by modified radical mastoidectomy for chronic suppurative otitis media.

INTRODUCTION

The complication of chronic suppurative otitis media are classically characterized as intracranial, extracranial (otologic), and cervical. The intracranial complications include meningitis, cerebellar and temporal lobe abscess, subdural empyema and lateral sinus thrombosis. Extracranial complications include suppurative labyrinthitis, labyrinthine fistula, facial nerve palsy, petrositis, extradural or perisinus abscess and subperiosteal, zygomatic abscess.

Parapharyngeal abscess as complication of aural cholesteatoma has been reported in literature. A cholesteatoma can result in a parapharyngeal abscess by involvement of the sheath of the digastric muscle. Involvement of the apex of the petrous temporal bone by cholesteatoma and development of a parapharyngeal abscess has also been described. We report the first case of cholesteatoma eroding the mastoid tip leading to parapharyngeal and retropharyngeal.

CASE HISTORY

A 32 year old male presented with history of right side otorrhoea of 10 years duration with fever, dysphagia, trismus, neck pain and torticollis of neck of 7 days duration. Patient also had respiratory distress and odynophagia for 2 days. There was no history of trauma or dental pain or caries teeth. The patient denied ataxia, vertigo, headache, blurred vision, orbital pain, nausea or nuchal rigidity. Otoscopic examination revealed polyp arising from the middle ear filling the external auditory canal surrounded by foul smelling discharge. Examination of left ear was normal. Oropharyngeal examination revealed bulging of right soft

palate and right parapharyngeal wall and posterior pharyngeal wall. The upper part of the neck on right side was extremely tender and indurated along with diffuse swelling. Indirect laryngoscopy examination revealed laryngeal edema. High resolution computerized tomography of mastoid documented cavity on right with soft tissue density involving mastoid air cells and external auditory canal (figures 1 & 2).

Figure 1

Figure 1: High resolution computerized tomography, coronal cut showing right mastoid abscess with erosion of mastoid tip.

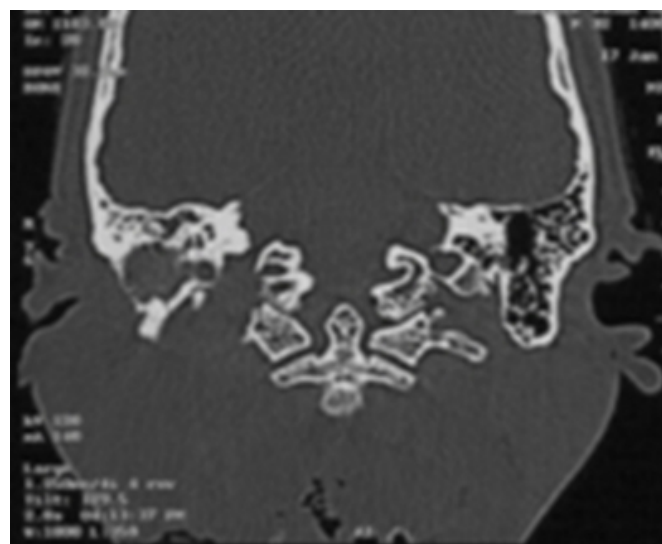
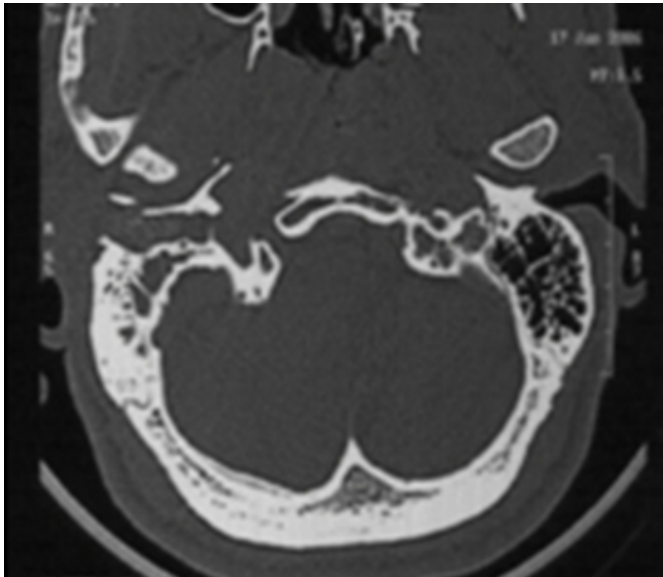


Figure 2

Figure 2: High resolution computerized tomography, axial cut showing soft tissue density involving right external auditory canal, middle ear and mastoid air cells.



Contrast enhanced computerized scan of neck showed parapharyngeal and retropharyngeal abscess (figures 3 & 4).

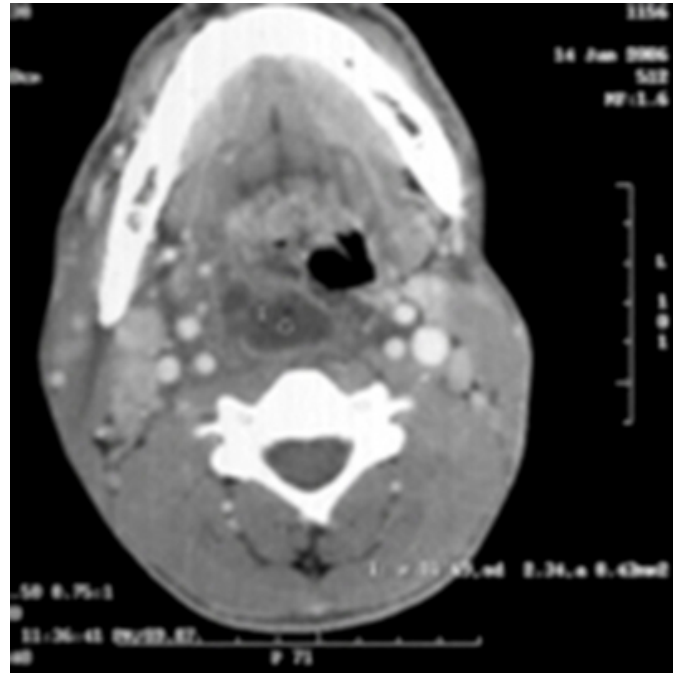
Figure 3

Figure 3: Axial cut, contrast enhanced computerized tomography of neck showing fluid filled abscess cavity in right parapharyngeal space.



Figure 4

Figure 4: Axial cut, contrast enhanced computerized tomography of neck showing fluid filled abscess cavity in retropharyngeal space compromising the air way.



Blood culture was sent and the patient was immediately started on broad spectrum antibiotics. Aural discharge was sent for culture and sensitivity. The patient underwent incision and drainage of neck abscess in emergency and mastoid exploration 48 hrs of incision and drainage of neck abscess. Incision and drainage was done through transcervical route. About 100 cc of pus was drained from the parapharyngeal space and retropharyngeal space. The pus was sent for culture sensitivity and acid fast bacillus and fungus. Following patient was kept intubated in view of laryngeal edema and started on intravenous steroid and was extubated after 48 hours. The key findings of mastoid exploration were (1) a sclerotic, poorly pneumatized mastoid with Korner's septum, (2) there was a polyp arising from the attic filling the external auditory canal, (3) cholesteatoma along with granulation tissue filling the mastoid antrum, attic, middle ear and mastoid air cells with erosion of posterior canal wall and mastoid tip, (4) malleus and incus were found partially necrotic and stapes superstructure was absent but footplate was intact. Blood culture was sterile. Pus was negative for acid fast bacilli, fungi and anaerobes but aerobic culture revealed *Proteus mirabilis* and *Klebsiella pneumoniae*, both sensitive to cefotaxime, gentamicin, ceftazidime and ceftriaxone. Patient made an unremarkable postoperative recovery. Four months postoperatively, repeat

axial and coronal CT of the temporal bones revealed only postoperative changes without residual disease with complete resolution of abscess. Clinically, the patient had a well-epithelised mastoid bowl with complete resolution of symptoms.

DISCUSSION

Parapharyngeal and retropharyngeal abscess arising as a complication of cholesteatoma is an uncommon entity. Abscess in the digastric muscle (Citelli's abscess) from the mastoid tip can extend into the parapharyngeal space because of its close proximate and from parapharyngeal space, abscess can spread to the retropharyngeal space through its posterolateral part. Parapharyngeal abscess manifests externally as tenderness and torticollis of the neck due to spasm of sternocleidomastoid muscle and trismus. The presenting feature of torticollis and trismus and bulge in oropharynx in our case are in accordance with earlier series. Odynophagia and respiratory distress and bulge in posterior pharyngeal wall suggestive of retropharyngeal abscess of otitic origin was reported, more in the preantibiotic era, with evidence of histologic and clinical (digital and instrumental) communication of the retropharyngeal space with the petrous apex or mastoid cavity (i.e., double mastoiditis with the irrigation of one ear exiting through the opposite ear). Bezold's mastoiditis in 1881 by Bezold and Siebenmann appears as neck abscess when pus penetrates the thin walled tip cells of mastoid cortex medial to the sternocleidomastoid muscle insertion, subsequently invading the deep neck spaces. Citelli's abscess occurs when pus from mastoid tip trickled down along the posterior belly of digastric muscle. From these abscess, the infection can spread to the retropharyngeal space through parapharyngeal space. Infection of the petrous apex can proceed inferomedial to extend directly into the parapharyngeal space. Suppuration of lymph nodes along the upper part of the internal jugular vein or internal jugular vein thrombophlebitis secondary to the downward extension of lateral sinus and jugular bulb thrombophlebitis can also lead to parapharyngeal space abscess. The parapharyngeal space abscess in our case was either due to extension of the infection along the digastric muscle or sternocleidomastoid muscle through erosion of mastoid tip. High resolution CT proved indispensable in the pre-operative diagnosis and surgical approach, especially in the localization of the parapharyngeal and retropharyngeal abscess cavity, in the delineation of the abnormal soft tissue and smooth bony erosion (characteristic of cholesteatoma) and in the

assessment of potential intracranial abscess. Treatment of chronic suppurative otitis media with complication requires intravenous antibiotics and concomitant surgical drainage. In this case, we did incision and drainage of parapharyngeal and retropharyngeal abscess by transcervical route along with intravenous antibiotics followed by modified radical mastoidectomy. The organism cultured in chronic suppurative otitis media are *Proteus vulgaris*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Escherichia coli*, *Klebsiella pneumoniae*, *Enterobacteriaceae*, and enterococci. As gram negative and anaerobic organisms, rather than β -hemolytic streptococcus are the predominant organisms in chronic suppurative otitis media, emergent antibiotic therapy should cover these organisms.

With the discovery of penicillin and sulfonamide agents in the 1930s and 1940s, the incidence of complication of complications of acute and chronic ear disease have decreased in absolute number but the relative distribution of complications remains unchanged. The complication of chronic suppurative otitis media can be divided into intracranial and extracranial complications. Extracranial complication may further be divided into temporal and extratemporal (cervical) as shown in table -1.

Figure 5

Table 1: Complication of cholesteatoma.

Intracranial	Temporal	Extratemporal (Cervical)
Meningitis	Suppurative labyrinthitis	Subperiosteal abscess
Brain abscess	Labyrinthine fistula	Zygomatic abscess
Cerebellar	Facial nerve palsy	Bezold's abscess
Temporal lobe	Extradural/perisinus abscess	Carotid sheath abscess
Intraparenchymal	Petrositis	Internal jugular vein thrombophlebitis
Lateral sinus thrombosis	Ossicular erosion	Subclavian vein thrombophlebitis
Otitic hydrocephalus	Keratitis obturans	Cholesteatoma fistula
Cerebral herniation	Intratemporal carotid aneurysm	Parapharyngeal abscess
Subdural empyema		Retropharyngeal abscess.
Cavernous sinus thrombosis		

A review of the literature discloses few reports of cervical complications of chronic suppurative otitis media: Bezold's abscess, carotid sheath abscess, internal jugular and subclavian vein thrombophlebitis, and neck mass with direct extension to mastoid cortex via a cholesteatomatous fistula, parapharyngeal abscess, parapharyngeal abscess with endopharyngeal common carotid blow out and pseudomonas cervical osteomyelitis with retropharyngeal abscess. Here we report an unusual case of parapharyngeal and retropharyngeal abscess as complication chronic suppurative otitis media with cholesteatoma via erosion of the tip of mastoid cortex. Aural cholesteatoma can similarly appear as

an encapsulated cervical mass of cholesteatomatous debris. In three reported cases extramastoid cholesteatoma has been manifested as a neck mass, attached to the mastoid cortex medial to the sternocleidomastoid muscle via an umbilical stock or fistula. Surkin et al reported a case of chronic otitis media with neck mass and torticollis initiated by thrombophlebitis of the sigmoid sinus, with extension to the internal jugular vein. The later resulted in a carotid sheath abscess and propagation into the subclavian vein, with subsequent subclavian vein thrombophlebitis mandating intravenous heparinization and antibiotics. In our case the internal jugular vein was normal. Schweitzer et al reported an atypical presentation of chronic suppurative otitis media with trismus, torticollis and unilateral parapharyngeal abscess. Parapharyngeal abscess in their case was via peritubal extension. The presentation of our case was very similar to this case but the parapharyngeal space was involved by the infection through the erosion of tip of mastoid cortex and from the parapharyngeal space infection extended into the retropharyngeal space. So the patient gave the history of neck pain, torticollis and trismus initially followed by dysphagia, odynophagia and respiratory distress later due to subsequent involvement of retropharyngeal space. Petrositis as cause of Parapharyngeal in our case was excluded due absence of clinical features like retro-orbital pain and diplopia. Paul et al ha reported a case of pseudomonas cervical osteomyelitis with retropharyngeal abscess as an unusual complication of otitis media without cholesteatoma. In their case haematogenous spread probable led to the cervical osteomyelitis and retropharyngeal abscess formation but in our case retropharyngeal space occurred as a direct spread of infection.

Singh et al reported a caser of parapharyngeal abscess due to cholesteatoma who developed an endolaryngeal common carotid blow out and survival after common carotid artery ligation without any neurological sequelae.in this case, they have suggested that the parapharyngeal abscess resulted from either due to the extension of infection along the diagastric muscle or followed suppuration of lymph nodes along the upper part of the internal jugular vein. As the internal jugular vein was normal on radiology and during surgery, the thrombophlebitis as cause of the parapharyngeal

abscess was excluded. No vascular complication occurred in our case. The patient is asymptomatic with a well epithelised mastoid bowl 4 months after surgery.

CONCLUSION

Although rare, cholesteatoma can result in parapharyngeal and retropharyngeal abscess from direct extension of infection along the posterior belly of digastric muscle and sternocleidomastoid muscle. If a patient of chronic suppurative otitis media develops trismus, neck pain and torticollis along with dysphagia and respiratory difficulties, the possibility these complications should be considered and managed accordingly.

CORRESPONDENCE TO

Senior resident Department of Otorhinolaryngology and Head-Neck Surgery Postgraduate Institute Medical Education and Research Chandigarh, India Phone no.9417111702 (m), 0172-2756760. e-mail- dr_pradipta04@yahoo.com fax no.0172-2744401, 2744450.

References

1. Gower D, McQuirt WF .Intracranial complication of acute and chronic infectious ear disease: A problem still with us. *Laryngoscope* 1983; 93:1028-1033.
2. Schweitzer VG, Fuentes J, Mickelson SA. Parapharyngeal abscess: An unusual complication of aural cholesteatoma. *Otolaryngol Head Neck Surg.* 1986; 94(5):637-41.
3. Maran AGD. Benign disease of the neck. In: Hibbert J, ed. *Scott Brown's Otolaryngology*, 6th edn.London:Butterworth,1997;5/16/1-5/16/19.
4. Yagoda MR, Selesnick SH. Temporal bone fibrous dysplasia and cholesteatoma leading to the development of a parapharyngeal abscess. *J Laryngol Otol* 1994; 108:51-3.
5. Bachwald C, Nissen F, Thomsen J. Parapharyngeal abscess and torticollis. *J Laryngol Otol* 1990; 104:829-30.
6. Pearlman SJ. Retropharyngeal abscess of otitic origin. *Arch Otolaryngol* 1929; 10:205-206.
7. Singh M, Bandyopadhyay S, Mohindra N, Mishra LS. Survivals of a patient with endopharyngeal common carotid blow out due to parapharyngeal abscess as an unusual complication of cholesteatoma. *J Laryngol Otol* 2005; 119:909-912.
8. Surkin MI, Kessler SM, Green RP, Lucente FE. Subclavian vein thrombosis secondary to chronic otitis media. *Ann Otol Rhinol Laryngol* 1983; 92:45-48.
9. Hughes GB, Damiani KA, Kinney SE, Levine HL. Aural cholesteatoma presenting as large neck mass. *Otolaryngol Head Neck Surg* 1980; 88:34-36.
10. Paul CA, Kumar A, Raut VV, Garhnam A, Kumar N. Pseudomonas cervical osteomyelitis with retropharyngeal abscess :an unusual complication of otitis media. *J Laryngol Otol* 2005; 119:816-818.

Author Information

Rijuneeta, MS

Department of Otorhinolaryngology and Head-neck Surgery, Postgraduate Institute of Education and Research

Pradipta Kumar Parida, MS, DNB

Department of Otorhinolaryngology and Head-neck Surgery, Postgraduate Institute of Education and Research

Sanjeev Bhagat, MS

Department of Otorhinolaryngology and Head-neck Surgery, Postgraduate Institute of Education and Research