

A Clinical Study on Complications of Chronic Suppurative Otitis Media

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Abstract

Introduction: Chronic suppurative otitis media [CSOM] is a common public health problem in India. Though there is decline in incidence of its complications and mortality, they are still frequent due to poor socioeconomic conditions, lack of awareness and unavailability of trained specialists in rural region.

Objective: Objectives of our study are to diagnose and identify the complications of CSOM, role of radiological investigations in CSOM, management of complications of CSOM and post-operative outcome and results of CSOM.

Materials and Methods: It is a prospective study comprises of 50 patients with complications secondary to CSOM admitted in department of ENT civil hospital, Ahmedabad. The study was done over a period from May 2017 to January 2020. Analysis was regarding the demographic profile, clinical features and a comprehensive investigation panel related to each complication and management protocol. All the patients with suspected complicated CSOM, according to signs and symptoms underwent computed tomography [CT] and MRI.

Results: In this study of 50 patients, 30 patients presented with extracranial complications and 20 patients with intracranial complications of CSOM. Out of extra cranial complication, post auricular abscess and out of intra cranial complications, brain abscess was found to be most common complication. Most frequent intraoperative finding of complicated CSOM patients was cholesteatoma. The intracranial complications presented with fever, headache and signs of meningeal irritation.

Conclusion: In this study we emphasize the importance of early diagnosis followed by prompt surgical management as the key in treatment of complicated CSOM.

Keywords: Complications; CSOM; Extracranial; Intracranial

Introduction

Chronic Suppurative Otitis Media is defined as chronic (> 3 months) inflammation of middle ear, cleft mucosa characterised by persistent perforation of tympanic membrane, ear discharge and

decreased hearing.

Complicated CSOM patients were having b/l ear discharge and most of them are complaining of ear discharge since childhood. In

the pre-antibiotic era, there was significant incidence of mastoiditis and intracranial complications caused by otitis media, which presented high rate of morbidity. After the introduction of antimicrobial agents, there has been a reduction in the incidence from 2.3% to 0.04% [1,2]. The complications of otitis media can be classified as extra cranial or intra cranial. Extracranial complications includes mastoiditis, mastoid abscess, bezold’s abscess, petrositis, Facial nerve paralysis and labyrinthitis. Intracranial complications include meningitis, subdural abscess, Brain abscess, otitic Hydrocephalus. It is more frequently seen in our country due to very poor socioeconomic conditions, lack of education and awareness. Middle ear discharge is still being considered a nuisance rather than a potentially dangerous conditions due to lack of education and lack of medical facilities. Unavailability of trained specialists is also a major concern in rural settings. The pathways for complications include thrombophlebitis of venules of adjoining cranial bones, bone erosion by pressure or enzymatic actions, preformed pathways and hematogenous spread. The present study was conducted to identify the clinical presentations of complications of Chronic suppurative otitis media and utility of early diagnosis, adequate surgical therapy and multidisciplinary approach.

Methods

It was a prospective study of 50 patients and the duration of study was from May 2017 to January 2020. All the consenting patients with complicated CSOM were included. In all the patient CT scan was done to find the extend of disease.

Those patients with some complications were operated by ENT surgeons directly while some having impending operative neurosurgical complications underwent neurosurgery first and then planned for ear surgery after an interval along with medical management. The demographic, chronological distribution, symptoms on admission, radiology, intra-operative findings, treatments, complications, duration of hospital stay and outcomes of patients were reviewed and analyzed.

Results

Out of 50 cases, 30 (60%) have extracranial complications and 20 (40%) have intracranial complications and 30 were males and 20 were females.

Among 30 males, 18 were having extracranial complications and 12 were intracranial complications and among 20 females, 12

were having extracranial complications and 8 were having intracranial complications.

All patients underwent HRCT temporal bone.it provides very good resolution of anatomical landmarks, its disadvantage is poor differentiation of cholesteatoma from other soft tissues, such as granulation tissue, cholesterol granuloma and brain tissue. Contrast enhanced CT is very useful in evaluation in patients suspected of having otogenic brain abscess, as it allows earlier detection of abscess and improved outcome [21].

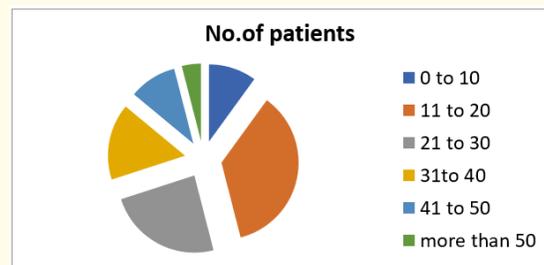


Figure 1: Age wise distribution.

The age of patients ranges between 4 years to 52 years.

The male to female ratio was 1.50.

Symptoms	No of cases	Percentage
Otorrhoea	50	100%
Decreased hearing	40	80%
Fever	22	44%
Otalgia	12	24%
Giddiness	10	20%
Headache	10	20%
Facial asymmetry	8	16%
Double vision	4	8%

Table 1: Symptoms.

In our study most common presenting symptom is otorrhoea. Other symptoms like decreased hearing, fever and otalgia were also seen.

In our study most common sign was mastoid tenderness followed by post aural swelling and nystagmus was seen in 4% of patients.

Signs	No. of cases	Percentage (%)
Mastoid tenderness	38	76
Post aural swelling	32	64
Papilloedema	15	30
Meningeal signs	22	44
Anemia	10	20
Sagging of posterosuperior meatal wall	6	12
Cerebellar signs	6	12
Fistula test	5	10
Nystagmus	2	4

Table 2: Signs.

All patient of complicated chronic suppurative otitis media underwent HRCT [High Resolution CT] temporal Bone. In patients to rule out any abscess contrast enhanced CT scan was done.

Extracranial complications	Number of patients	Percentage %
1.Subperiosteal abscess		
a) Post auricular abscess	15	50%
b) Bezold’s abscess	02	07%
c) Zygomatic abscess	02	07%
2. Facial nerve Paralysis	07	23%
3. Labyrinthitis	03	10%
4. Petrositis	01	03%

Table 3A: Complications.

In our study post auricular abscess was found to be most common extra cranial complication which was seen in 50% cases while petrositis being least common complication and it is seen in only 1 patient.

Intracranial complications	Number of patients	Percentage %
Brain abscess	7	35%
a) Temporal lobe abscess	4	
b) Cerebellar abscess	3	
Meningitis	5	25%
Extradural abscess	3	15%
Subdural abscess	3	15%
Lateral sinus Thrombophlebitis	2	10%

Table 3B: Complications.

Extracranial complications	
1. Sub periosteal abscess	
a) Post auricular abscess	
b) Zygomatic abscess	Incision and Drainage followed by Modified radical mastoidectomy [MRM]/radical mastoidectomy
c) Bezold’s abscess	
2. Labyrinthitis with/without Fistula	IV Antibiotics + modified radical mastoidectomy
3. Facial nerve paralysis	*Modified radical mastoidectomy/ radical mastoidectomy + Facial Nerve Decompression **Facial nerve decompression
4. Petrositis	IV Antibiotics + modified radical mastoidectomy

Table 4A: Management.

*: Healthy facial nerve dehiscent.

** : Granulations over dehiscent facial nerve.

Intracranial complications	
1. Extradural abscess	Neurosurgical intervention + MRM
2. Meningitis	IV Antibiotics + MRM/radical mastoidectomy
3. Subdural abscess	Neurosurgical intervention + MRM/radical mastoidectomy
4. Lateral sinus thrombophlebitis	IV Antibiotics + modified radical mastoidectomy
5. Brain abscess	Neurosurgical intervention + MRM/radical mastoidectomy

Table 4B: Management.

Extracranial complications such as postauricular abscess, zygomatic abscess and bezold abscess were first treated by incision and drainage followed by modified radical mastoidectomy. Facial nerve paralysis was treated by modified radical mastoidectomy along with facial nerve decompression. Complications such as labyrinthitis and petrositis were initially treated with IV antibiotics followed by modified radical mastoidectomy.

In management of intracranial complications, empirical antibiotic therapy was initiated with third generation cephalosporin and vancomycin [19]. Its advantage is its bactericidal activity, ability to penetrate blood brain barrier and enter CSF, their extended activ-

ity against beta lactamase producing organisms and gram negative organisms and low toxicity [20].

Modified radical mastoidectomy/Radical mastoidectomy was the ultimate surgery performed to clear out the disease, which was the source of infection and complication.

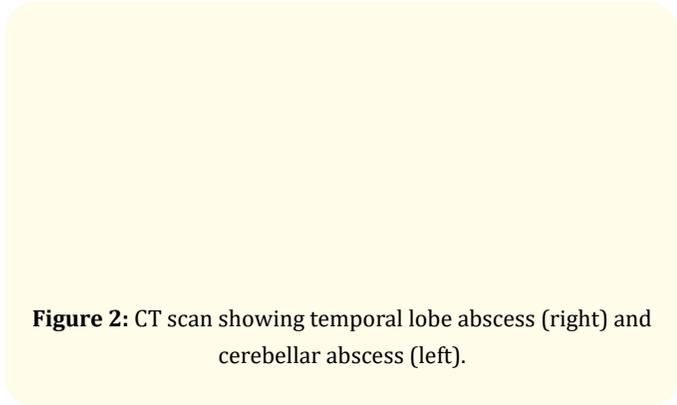


Figure 2: CT scan showing temporal lobe abscess (right) and cerebellar abscess (left).

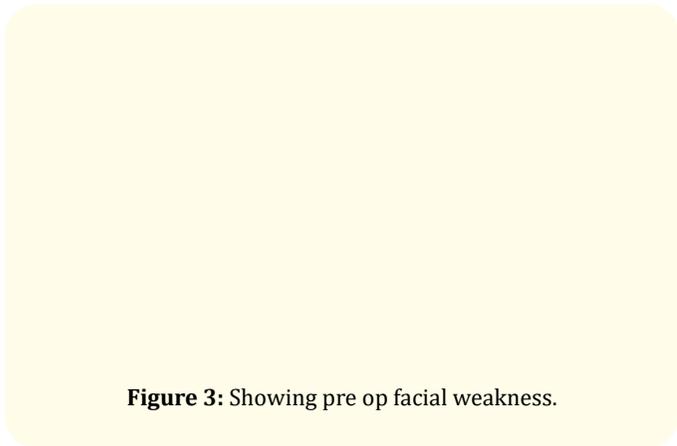


Figure 3: Showing pre op facial weakness.

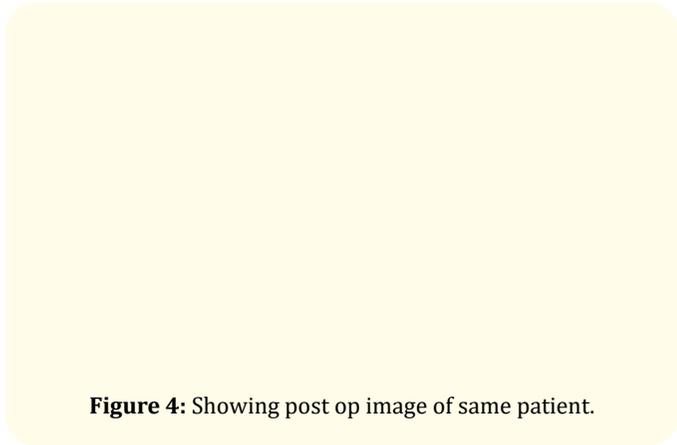


Figure 4: Showing post op image of same patient.

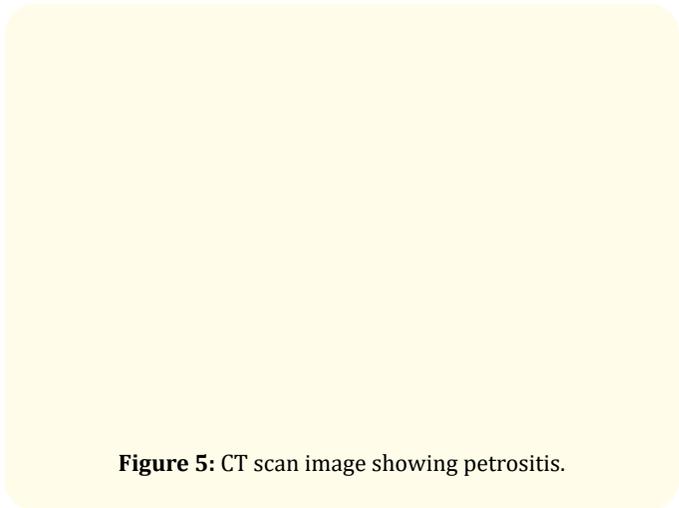


Figure 5: CT scan image showing petrositis.

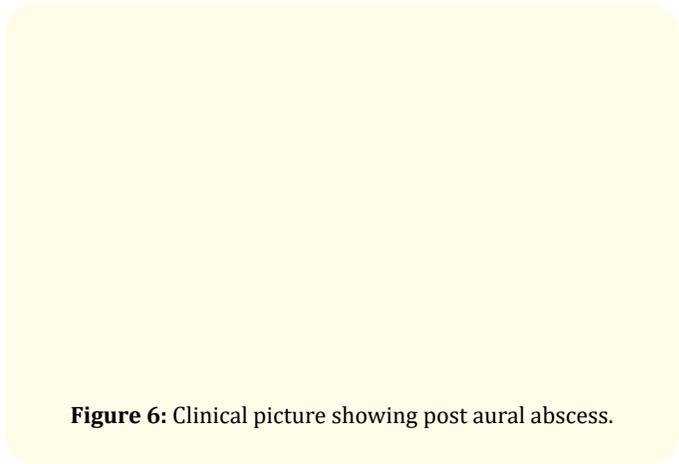


Figure 6: Clinical picture showing post aural abscess.

Discussion

Chronic suppurative otitis media is a huge public health problem. Its complications are dangerous and at the same time preventable. In our study it was found that Extra-cranial complications are more common than intra-cranial complications. Males have high preponderance for both extracranial and intracranial complications. In our study, 60% patients were males and 40% were females with a male female ratio of 1.5:1. Our study result coincides with results of Baig, *et al.* [3], Neogi, *et al.* [4], Shrestha, *et al.* [5], Islam, *et al.* [6], Salman, *et al.* [7], Sachdeva, *et al.* [8] and Okafor [9] with male predominance. The most frequent symptoms of our patients were otorrhoea, headache and fever which were similar to other report [13,14]. Otorrhoea was present in all patients at the time of presentation. Deafness is seen in 80%, otalgia in 12% and giddiness in 20% patients. Our study coincides with study of

Varshney, *et al.* [10], Salman, *et al.* [7] and Memon, *et al.* [11] with almost all the cases present with ear discharge.

In our study majority of patients had history of 2 - 5 years duration of ear discharge (37%) and 0 - 1 year (24%). So our study coincides with study of Varshney, *et al.* [10] and Memon, *et al.* [11] in terms of duration of discharge. Out of Extra-cranial complications, post auricular abscess is found to be most common complication and it was similar between our study and that of Osma, *et al.* [12]. Out of intra-cranial, brain abscess was most common complication found. Patients who presented with post auricular abscess and zygomatic abscess, incision and drainage was done followed by modified radical mastoidectomy. In patients of complicated csom, cholesteatoma was most common intra operative finding in the middle ear and mastoid cavity. Djeic and Savic [16] have proposed that facial nerve paralysis in otitis media develops when inflammation involves facial nerve. In our study in lateral sinus thrombosis patients, anticoagulation has been advocated to prevent extension of thrombus to distal sinuses which was similar to study done by Kaplan DM, *et al.* [15]. Anticoagulant is not always indicated in its management because venous sinuses has been shown to recanalize without anticoagulation following mastoidectomy and 6 weeks course of antibiotics [17,18]. Systemic anticoagulation has traditionally been achieved by initial intravenous treatment with unfractionated heparin followed by transition to oral warfarin [18]. It can be continued for 3 - 4 weeks. Anticoagulation limits propagation of thrombus and increases intracranial drainage and reduces the effects of raised intracranial pressure resulting in improvement of neurological condition [18].

In our center in patients with extracranial complications ossicular reconstruction was done in some cases but however it was dependant on extension of disease, complications and facial nerve involvement status.

While in patients with intracranial complications, depending on general condition of the patient and anesthetic risks and duration of anesthesia second stage surgery was planned for reconstruction.

Papilloedema does have a role in deciding whether the patient is to be addressed by neurosurgical team or ENT team.

There were no post-operative complication of surgeries except that 1 patient developed grade 3 facial nerve palsy after canal wall down procedure most probably due to excessive granulations and

bony erosion. In our study of 50 patients we have not encountered any patient with post op recurrent meningitis but we had 2 patients with residual abscess which were managed conservatively by Neurosurgery department In our study out of 8 patients with facial nerve paralysis, 6 patients had no facial nerve paralysis post operatively, 1 patient facial nerve paralysis resolved after more than 6 months of physiotherapy and 1 patient has grade 2 facial nerve paralysis which has not resolved.

In our study one case of complicated CSOM with temporal lobe abscess was operated by Neurosurgery and ENT department under general anesthesia, who later on succumbed to death. This hints that this might be due to very long duration of general anesthesia as compared to local anesthesia.

Conclusion

In our study we conclude that maximum number of cases were in age group of 10 - 20 years. Males predominate females in the incidence ratio. It is quite common in lower socio economic group. It is commoner in rural than urban area. Extra cranial complications were more common than intracranial complications. Among extra cranial post auricular abscess was most common. Among intracranial brain abscess (temporal lobe abscess) was found to be most common. Complicated CSOM patient may have excessive osteosclerotic activity so chances of Facial Nerve Palsy can be present. CT scan is the gold standard of investigation for intracranial complications. Neurosurgery or MRM can be performed according to severity of disease. Risk is higher in general anesthesia as compared to local anesthesia owing to very long duration.

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Conflict of Interest

No conflict of interest is between any authors or among any author and other people or organisations.

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