

Original Research

To evaluate the Pattern of Otogenic Complications

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ABSTRACT:

Aim: To evaluate the Pattern of Otogenic Complications. **Material and methods:** The proposed Cross sectional observational study was carried out in Department of ENT. The study included all Patients who presented with Complications of CSOM. All patients were thoroughly examined and detailed Ear, Nose, Throat examination along with audiological assessment was done along with Pure Tone Audiometry, CT Scan of Temporal Bone with Brain cuts and other relevant blood investigations as required for pre anaesthesia fitness. **Results:** In the study, mean age of the patients was found to be 25.98 ± 7.58 years. The youngest subject was of 6 years and oldest 59 years. Extra cranial complication was the most common complication seen in 95% of total cases with only 5% presented with intracranial complication. The study showed post-auricular abscess as the commonest extracranial complication occurring in 40% of subjects followed by postauricular fistula (30%), Mastoid abscess (15%), Facial paralysis (10%), Zygomatic Abscess (1%), Labyrinthitis/Labyrinthine fistula (1%) and Promontory Fistula (1%). Meningitis was the commonest intracranial complications seen in 1% of subjects followed by and Brain Abscess in 1%. none of other intracranial complications were seen in our study. **Conclusion:** Otogenic problems still occur in the present day, but at a lower rate than in the pre-antibiotic era. The most prevalent linked factor is untreated sickness due to illiteracy and a lack of healthcare facilities in rural areas of the nation. Complications are more common in people from lower socioeconomic backgrounds, where illiteracy is prominent, adding to ignorance and a lack of health knowledge.

Keywords: Chronic, demographic, otitis

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INTRODUCTION

Chronic otitis media (COM) is an inflammatory condition that causes persistent alterations in the tympanic membrane, culminating in atelectasis of the tympanic membrane, permanent perforation, creation of retraction pockets with or without cholesteatoma formation, and ossicular destruction. It may also cause tympanosclerosis or dimeric tympanic membrane due to irregular healing of the tympanic membrane. The global prevalence of chronic otitis media is estimated to be between 65 and 330 million per year. The majority of the world's chronic otitis media population lives in South-East Asia, the Western Pacific, and Africa. Furthermore, around 21,000 persons (33/10 million people) die each year as a result of chronic otitis media complications[1,2]. Chronic otitis media is one of the most frequent ENT health issues in India. However, the prevalence of problems has decreased, although they continue to occur owing to poor

socioeconomic situations, a lack of awareness about health care, and the availability of skilled specialists in rural settings[3,4]. India is one among the nations with the greatest frequency, with a prevalence of more than 4%[2]. Prior to the antibiotic era, intracranial problems occurred in 2.3% - 4 instances, but the risk of complications has been reduced to 0.15% - 0.04% after the advent of antibiotics and improved surgical procedures. The mortality rate was lowered from 25% to 8%[3]. Chronic otitis media (COM) is thought to be caused by long-term eustachian tube dysfunction, a poorly aerated middle-ear region, and numerous bouts of acute otitis media, resulting in recurrent middle ear infections. Chronic otitis media with inactivity is characterised by a persistent, dry central perforation with occasional drainage. The tympanic mucosa is exposed to germs from the external auditory canal as well as the Eustachian tube, which causes active chronic otitis media (chronic or recurrent mucoid

otorrhea). There is a substantial risk of intra and extracranial consequences in squamosal Chronic Otitis Media. This is owing to the ear's critical anatomical placement near the brain and other essential organs such as the facial nerve and the labyrinthine system, as well as the underlying pathology of COM, which is a continual cycle of inflammation, ulceration, granulation, and cholesteatoma production. Meningitis may occur as a consequence of direct intracranial infection as a result of inflammation and erosion of the tegmen plate as a result of direct erosion and hyperaemic decalcification, and in certain instances as a result of hematogenous pathway. Acute middle ear infection produces irritation and inflammation of the mucosa, as well as oedema. Inflammation causes mucosal ulcers and epithelial lining breaches. Granuloma and polyp development are possible. This process might continue, demolishing adjacent buildings and causing COM issues. Mastoiditis, Petrositis, Facial Paralysis, Postauricular Abscess, Labyrinthitis/Labyrinthine fistula, Bezold's Abscess, Temporal Abscess, Encephalocele, and Cerebrospinal Fluid Leakage are examples of extracranial problems. Extradural abscess, Subdural abscess, Meningitis, Brain Abscess, Lateral sinus thrombophlebitis, and Otitic Hydrocephalus are examples of intracranial problems. There are several variables that contribute to the occurrence of these problems. Direct extension through preexisting channels may occur in acute exacerbations of COM or AOM.[2]These pre-made pathways might include congenital dehiscence of the bony facial canal, patent sutures, prior skull fractures, surgical flaws, oval and round windows, and so on. Other considerations include the amount of mastoid pneumatization, the virulence of the microorganism, its antibiotic sensitivity, and the state of human immunity. Inadequate treatment of recurrent otitis media, as well as a lack of illness knowledge among patients, may worsen the situation further. Complications are often caused by increasing bone erosion, which increases the risk of injury to the facial nerve, labyrinth, and dura. The most typical way for a brain abscess to arise is by progressive retrograde thrombophlebitis. Infection spreads through veins that are contiguous with either the infected pneumatized areas of the temporal bone or the previously thrombosed Dural venous sinus, as well as direct connection with the extracranial, intracranial, and cranial diploic veins. As a result, sigmoid sinus thrombosis might result in thrombophlebitis of other sinuses. Recognizing patterns of extension inside the temporal bone and patterns of neurovascular involvement may help with the treatment of chronic otitis media problems.

MATERIAL AND METHODS

The proposed Cross sectional observational study was carried out in Department of ENT. The study included

all Patients who presented with Complications of CSOM.

INCLUSION CRITERIA

All patients of complications of chronic otitis media were included in this study.

EXCLUSION CRITERIA

All those patients not willing to participate in this study were excluded.

METHODOLOGY

A written informed consent was obtained from all patients after explaining them about the study in local language along with the planned procedure. All the cases of complications of chronic otitis media fulfilling the inclusion criteria were evaluated for the study. All patients were thoroughly examined and detailed Ear, Nose, Throat examination along with audiological assessment was done along with Pure Tone Audiometry, CT Scan of Temporal Bone with Brain cuts and other relevant blood investigations as required for pre anaesthesia fitness. The results obtained were analysed statistically using Statistical Package for the Social Sciences (SPSS) version 25.0

RESULTS

A total of 100 patients were included in the study and following results were observed which were evaluated and analyzed.

In the study, mean age of the patients was found to be 25.98 ± 7.58 years. The youngest subject was of 6 years and oldest 59 years. Age group of 20-30 years was the most commonly affected accounting for 37% and the age group least affected was 40 – 50 years old which were only 2% of the study participants. (Table 1). A total of 62% patients were Males and remaining were females and the study showed a Male Female ratio of 1.63:1. A total of 89 % of patients who landed with otogenic complications in the study belonged to rural population and rest 11% were from urban area. The study showed a much higher prevalence of otogenic complications (59%) among subjects belonging to lower socioeconomic status and only 1% cases represented from upper middle class and none of the cases were from upper class of society.

The study showed that 65% of cases presented with otogenic complication after 3 years from the onset of ear discharge whereas rest 35% presented with complications within 3 years of onset of ear discharge. Extra cranial complication was the most common complication seen in 95% of total cases with only 5% presented with intracranial complication. The study showed post-auricular abscess as the commonest extracranial complication occurring in 40% of subjects followed by postauricular fistula (30%), Mastoid abscess (15%), Facial paralysis (10%), Zygomatic Abscess (1%), Labyrinthitis/Labyrinthine fistula (1%) and Promontory Fistula (1%). Meningitis

was the commonest intracranial complications seen in 1% of subjects followed by and Brain Abscess in 1%. none of other intracranial complications were seen in our study.

Table 1: Age wise distribution

| Age group (Years) | Number | Percentage |
|-------------------|--------|------------|
| Below 10 | 7 | 7 |
| 10-20 | 27 | 27 |
| 20-30 | 37 | 37 |
| 30-40 | 23 | 23 |
| 40-50 | 2 | 2 |
| Above 50 | 4 | 4 |
| Total | 100 | 100 |

Table 2: Distribution of complication

| Complication | Total n=100 | % | P value |
|------------------------------------|-------------|----|---------|
| Post-auricular abscess | 40 | 40 | 0.21 |
| Post-auricular Fistula | 30 | 30 | 0.06 |
| Mastoid abscess | 15 | 15 | 0.81 |
| Facial paralysis | 10 | 10 | 0.27 |
| Zygomatic Abscess | 1 | 1 | |
| Labyrinthitis/Labyrinthine fistula | 1 | 1 | |
| Promontory Fistula | 1 | 1 | |
| Brain Abscess | 1 | 1 | |
| Meningitis | 1 | 1 | |

The pattern of otogenic complications was not significant among male and female in the present study.(Table 2)

Table 3: Distribution of all patients age group and different complication

| Complication | Below 20 n=34 (%) | 20-40 n=60(%) | Above 40 n=6(%) | Total | P value |
|------------------------------------|-------------------|---------------|-----------------|-------|---------|
| Post-auricular abscess | 10 | 30 | 0 | 40 | 0.21 |
| Post-auricular Fistula | 18 | 11 | 1 | 30 | 0.08 |
| Mastoid abscess | 2 | 12 | 1 | 15 | 0.61 |
| Facial paralysis | 3 | 7 | 0 | 10 | 0.33 |
| Zygomatic Abscess | 1 | 0 | 0 | 1 | - |
| Labyrinthitis/Labyrinthine fistula | 0 | 0 | 1 | 1 | - |
| Promontory Fistula | 0 | 0 | 1 | 1 | |
| Brain Abscess | 0 | 0 | 1 | 1 | - |
| Meningitis | 0 | 0 | 1 | 1 | - |

The present study didn't found any significant difference of presentation of otogenic complications among different age groups. (Table 3)

DISCUSSION

Pawar et al[2], Sharma et al[3], Kulkarni et al[4], Chandrashekharayya et al[5], Yagiz et al[6] had found majority of patients who presented with otogenic complications were in the age group of 11 – 30 years (38.5%), 5 – 10 years (28.9%), 21 – 30 years (36.6%), 31 – 40 years (23.8%) and 31 – 40 years of age (33.3%) respectively. This variation can be due to various demographic pattern of the geography. The pattern of otogenic complications was not significant among male and female in the present study. Our study shows Male Female ratio of 1.63: 1 and similar result were also reported in the studies done by Sharma et al[3], Chandrashekharayya et al[5] and Mustafa et al[7]. Studies by Pawar et al[2] and Vikram et al [8] has also found that majority of the patients encountering otogenic complications belonged to rural part of country and represented the lower socioeconomic strata of society and mostly

were illiterate. Though wide variability in the percentages of the above domain were seen but inference of the outcomes were similar with our study, this could be explained by variability in the density of population in different part of country. Studies done by Sharma et al[3], Chandra-shekharayya et al[5] had found that majority of patients belongs to lower socioeconomic status. Mostafa et al[7] has seen that complications were commonly found in young patients from a lower socioeconomic class and equally affected patients of both gender. Wahid et al[9] had found in their study that most of the patients belonged to lower socioeconomic status(59.1%). Age group wise relationship of complications shows that Post-auricular abscess, mastoid abscess and facial paralysis were more common in 20 – 40 years age group comparing to other age group but this was statistically non-significant (p>0.05). While Post-auricular fistula was more common in below 20 years

age group comparing to other age group and this was also statistically non-significant ($p>0.05$). Gender wise relationship of complications shows that Post-auricular abscess and Mastoid abscess were more common in males and this was statistically non-significant ($p>0.05$). While Post-auricular fistula and facial paralysis were more common in females and this was statistically non-significant ($p>0.05$). This conclude that pattern of otogenic complications doesn't follow any preference for gender or age group. Yorgancilar et al had also found mastoid abscess as the commonest extracranial complication whereas commonest intracranial complications were lateral sinus thrombophlebitis whereas in our study we had limited number of patients with intracranial complications and meningitis was the most common amongst them.[10]

CONCLUSION

Otogenic problems still occur in the present day, but at a lower rate than in the pre-antibiotic era. The most prevalent linked factor is untreated sickness due to illiteracy and a lack of healthcare facilities in rural areas of the nation. Complications are more common in people from lower socioeconomic backgrounds, where illiteracy is prominent, adding to ignorance and a lack of health knowledge. The research has a higher prevalence of extracranial problems than intracranial complications, which has lowered death but has left morbidity and hearing damage in our culture, which has to be studied further.

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