

CHRONIC SUPPURATIVE OTITIS MEDIA COMPLICATIONS SCENARIO DURING COVID 19 PANDEMIC

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ABSTRACT

Introduction: In December 2019, world health organisation (WHO) declared corona virus disease (COVID 19) led to disruption in routine and non-emergency medical facilities. This increased the morbidity risk associated with some of the preventable conditions, one of them being chronic suppurative otitis media (CSOM). **Methods:** Retrospective data was collected between March's 2019-2021 in the department of ENT and head neck surgery, BRLSABVM medical college, Rajnandgaon, CG.,India.. All chronic otitis media patients with or without complications were included **Results:** In our study the number of complicated cases which were 30 patients out of the 402 patients, the rate comes out to be 7.4%. In this study, before the pandemic that is form march 2019 to march 2020 the percentage of complicated cases were found to be 7 (23.6%) and during the pandemic that is from April 2020-March 2021 it was 23(76.3 %) that shows increase in number of complications during pandemic. Most common age group involved was 21 to 40 years. The most common Extra cranial complication was mastoid abscess (36.6%), followed by facial nerve palsy (FNP) 20% The most common Intracranial complication was meningitis (16.6%) followed by brain abscess (6.6%) and extradural abscess (3.3%). **Conclusion:** In our study we could find that there was a change in CSOM behaviour in terms of complications in pre-pandemic and pandemic period. Study shows rise in complication rate from 7 cases during the pre-pandemic times to 23 cases during pandemic times. This shows the importance of timely intervention which should be available to treat common diseases like CSOM to avoid the possible complications and their sequelae.

Keywords: Chronic Supportive otitis media, COVID-19 pandemic, complications.

Introduction

In December 2019, world health organisation (WHO) declared corona virus disease (COVID-19) pandemic (later on India government did so in March 2020) which led to disruption in routine and non-emergency medical facilities. This increased the morbidity risk associated with some of the preventable conditions; one of them being chronic suppurative otitis media (CSOM). It is characterised by recurrent discharge over 2 to 6 weeks due to inflammation of middle ear cleft and permanent perforation syndrome. CSOM can lead to extra cranial and intracranial complications, and these complications are more common in unsafe type of CSOM compared to the safe type CSOM because of the associated cholesteatoma which has bone eroding capacity. The most common organisms associated with CSOM are *Pseudomonas aeruginosa* and *Staphylococcus aureus*. *Pseudomonas aeruginosa* is more commonly associated with bony necrosis which causes complications in CSOM (Verhoeff M et al 2006). Extra cranial complications are acute mastoiditis, labyrinthitis, facial nerve paralysis and different types of abscess in relation to middle ear cleft. Intracranial complications are meningitis, brain abscess, lateral sinus thrombophlebitis and otitic hydrocephalus etc (Harker LA et al 2003). The routes of spread of extra cranial and intracranial complications include thrombophlebitis of venules of adjoining cranial bones, bone erosion by pressure, bone necrosis by enzymatic actions, preformed pathways and hematogenous spread (Yorgancilar E et al 2013).

The prevalence of CSOM in India is 7.8% (WHO 2012). If not treated timely, accurately and properly, it can lead to several complications. These complications are more common in developing countries because of low socioeconomic status, poor hygiene, scarcity of health infrastructure etc. Though the frequency has reduced from 20% in 1938 to 2.5% in 1948 to current 0.7 to 3.2% worldwide (Abada RL et al 2009). this study is based on the change in rate of complications of CSOM before and during pandemic for which data was analysed.

Methods

Retrospective data was collected between April 2019 to March 2021 in the department of ENT and head neck surgery, BRLSABVM medical college, Rajnandgaon, CG, India. Patients were selected based on the clinical features and otoscopy on outpatient basis. The demographics, chronological distribution, symptoms, complications were assessed and analysed. In this study all CSOM patients with or without complications were included, and patients with other conditions like acute otitis media, other infective conditions and not willing to take part were excluded. Patients were evaluated clinically and routine investigations were done along with pure tone audiometry, and radiological studies. Complications of CSOM were studied as extracranial (EC) and intracranial (IC) complications. Data was evaluated using percentages and was compiled on MS Excel spreadsheet.

Result

During the period from April 2019 to March 2021, 402 patients presented to otorhinolaryngology department were diagnosed with CSOM out of which 30 (7.5%) patients were diagnosed with one or other complications. Male to female ratio was 1.15. Table I depicts the patients with complications of chronic otitis media ranged from 6 to 52 years of age. The complications were more in age group between 31 to 40 years.

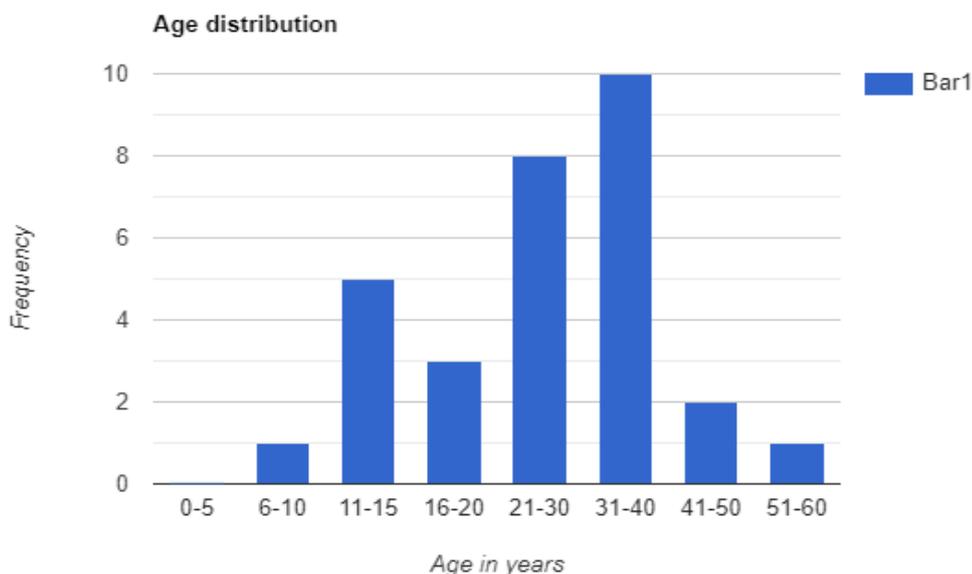


Figure 1 showing age distribution of the cases

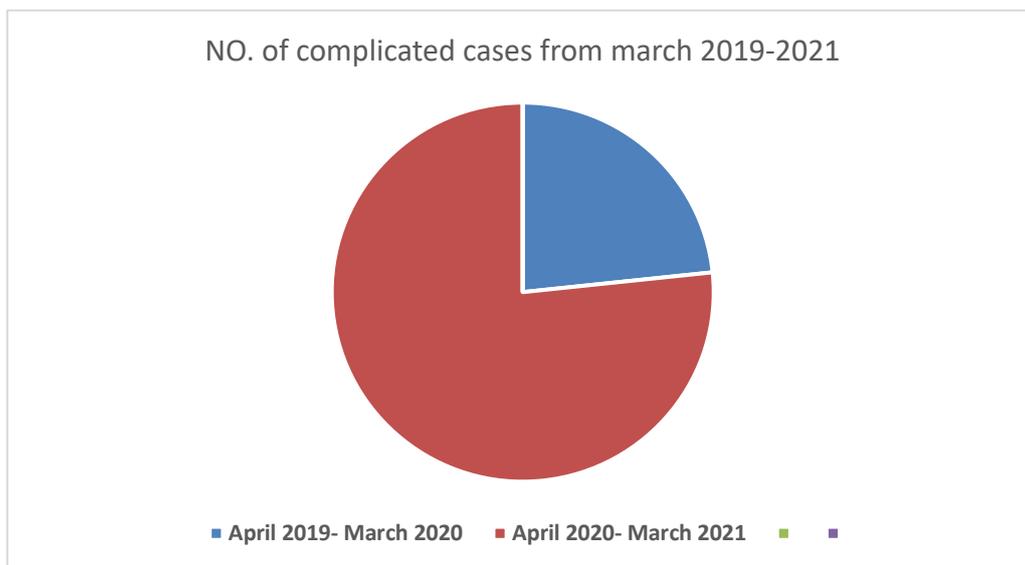


Figure 2: total number of CSOM complications

In this figure II out of the 30 cases diagnosed with complicated CSOM, 23 (76.6%) happened during pandemic, rest 7 (23.3%) happened before pandemic, this trends is of increasing type compared to the non-pandemic duration.

Table 1 Extra and Intracranial complications

| Complications | No. of patients | Percentage (%) |
|------------------------------------|-----------------|----------------|
| Extracranial | | |
| Mastoid abscess | 11 | 36.6 |
| Labyrinthitis/labyrinthine fistula | 5 | 16.6 |
| FNP | 6 | 20 |
| Petrositis | 0 | 0 |
| Intracranial | | |
| Lateral thrombophlebitis | 0 | 0 |
| Meningitis | 5 | 16.6 |
| Brain abscess | 2 | 6.6 |
| Extra Dural abscess | 1 | 3.3 |
| Otitic hydrocephalus | 0 | 0 |
| Total | 30 | |

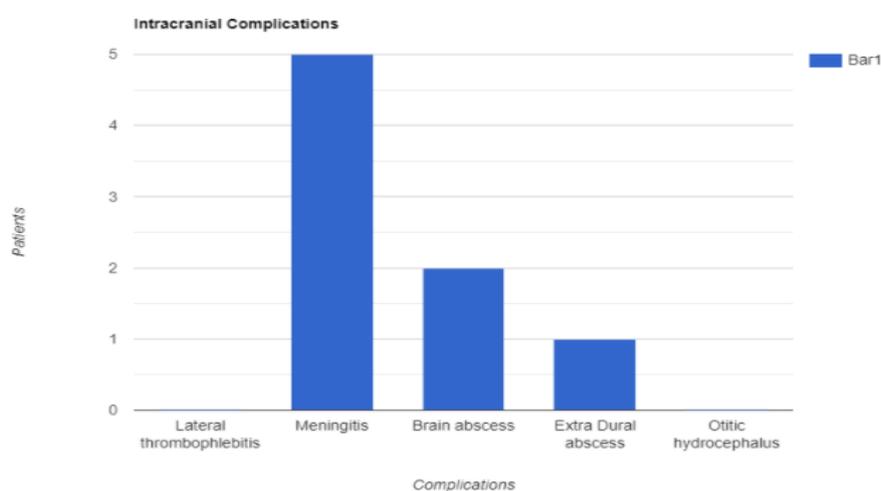


Figure 3 : Showing intracranial complication of CSOM

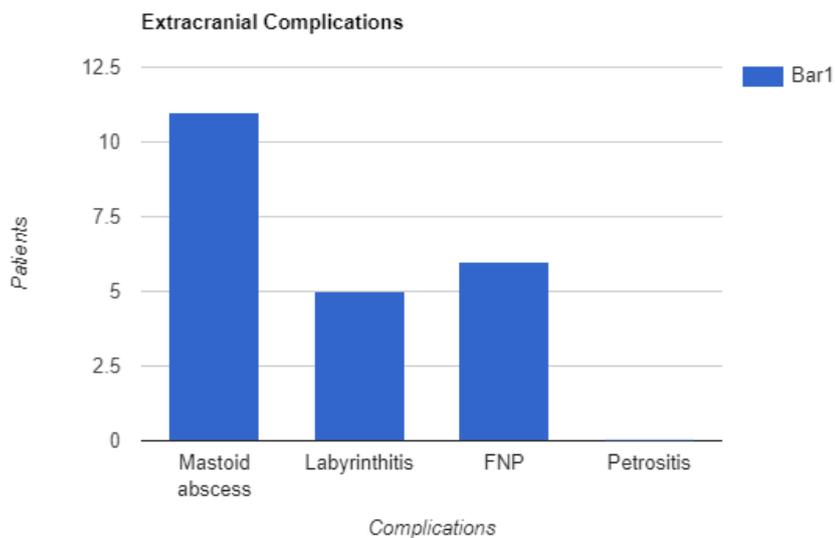


Figure 4: showing extra cranial complication of CSOM

In figure III and IV, the most common Extracranial complication was mastoid abscess (36.6%), followed by FNP (20%) and the most common Intracranial complication was meningitis (16.6%) followed by brain abscess (6.6%) and extradural abscess (3.3%).

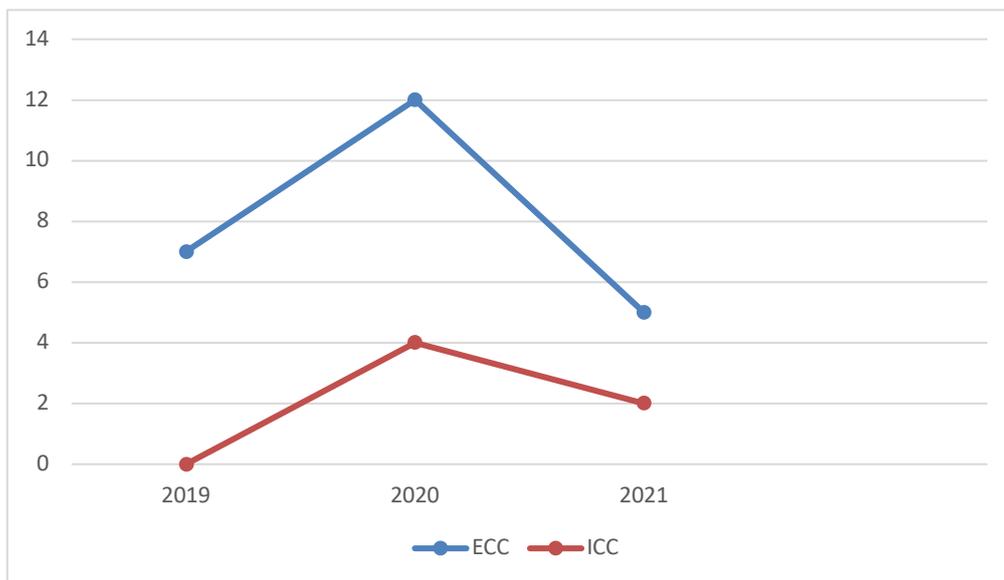


Figure 5: Extra cranial and intracranial complications trends in time line.

From the figure V it is clear that there is increase in number of both extra and intracranial complications of CSOM during covid pandemic. Either extra cranial or Intracranial or both complications occurred in 30 patients and majority of complication happened during pandemic duration.

Table 2: Symptomatology of complicated CSOM.

| Symptoms | No. of patients | Percentage (%) |
|------------------------|-----------------|----------------|
| Otorrhea | 30 | 100 |
| Headache | 6 | 20.0 |
| Decreased hearing | 13 | 43.3 |
| Meningeal sign | 6 | 20.0 |
| Fever | 17 | 56.6 |
| Vertigo | 8 | 26.6 |
| Postauricular swelling | 12 | 40.0 |
| Facial nerve paralysis | 6 | 20.0 |

Patients presented with main complaint of otorrhoea (100%) which was foul smelling, scanty, occasionally blood stained and aggravated at the time of upper respiratory tract infections, fever (56.6%) second most common symptom which was mild to moderate degree and in few cases it was high, some patients also had chills and rigor associated with it, decreased hearing was present in 43.3% patients, may be because the patient was not aware or was habitual to the decreased hearing and was more worried about complications associated with it, followed by other complications.

Following is the table (table IV) showing the complications in safe as well as unsafe type.

Table 3 extra and intra cranial complication of CSOM

| Complications | Mucosal disease | Squamous disease |
|------------------------------------|-----------------|------------------|
| Extracranial | | |
| Mastoid abscess/mastoiditis | 2 | 9 |
| Labyrinthine fistula/labyrinthitis | 0 | 5 |
| Facial nerve paralysis | 2 | 4 |
| Intracranial | | |
| Lateral thrombophlebitis | 0 | 0 |
| Sigmoid sinus abscess | 0 | 0 |
| Meningitis | 1 | 4 |
| Brain abscess | 0 | 2 |
| Extradural abscess | 0 | 1 |
| Otitic hydrocephalus | 0 | 0 |
| Total | 5(16.6%) | 25(83.3%) |

Discussion

In CSOM, pathology occurs in middle ear cleft which may be safe that is mucosal type or unsafe which is squamous type. Though the incidence of the safe type CSOM in general public is more compared to the unsafe type, but the percentage of the complications is less in mucosal type that is 16.6% to that of squamous type that is 83.3%. The reason behind more complications in unsafe ear is presence of cholesteatoma with granulations which has the potential to erode the bones by Proteolytic enzymes

Before the covid pandemic started in December 2019, all the medical facilities were available and all the conservative treatment facilities were given timely but as the pandemic started in 2020, there was lockdown leading to the disruption in transportation and medical facilities and the medical attention was shifted to treat the increasing burden of the covid patients leading to the delay in medical care for other conditions. In our study, the following findings were made out, more commonly involved group with complications was young and middle aged that to males more than females. The other studies also suggested the same findings like (Abada RL et al 2009) and (Sharma N et al 2015). Symptomatically, the most frequent symptoms of patients were otorrhea, fever and hearing loss. Before the pandemic that is from April 2019 to march 2020 the percentage of complicated cases were found to be 23.6% and during the pandemic 76.3 %, shows increase in number of complications. In our study if we talk about the number of complicated cases which were 30 patients out of the 402 patients, the rate comes out to be 7.4% which is comparatively higher with respect to other study like (Mustafa A et al 2008). May be because complications have increased in pandemic duration approximately three times compare to pre-pandemic making it 7.4 %. According to the pathology, 83.3% complications occurred in cholesteatoma patients and 16.6% in mucosal ear diseases (Abada RL et al 2009) and (Kangsanarak J et al 1993). The mastoid abscess was most common extracranial complication (36.6%) which may be due to the blockage of the aditus, leads to empyema in mastoid process. This empyema may erode the outer cortical bone of mastoid process leading to formation of post auricular mastoid abscess or fistula. In one study, (Dubey et al 2010) found a correlation of the intracranial complication with the mastoid abscess. It stated that since the pus is getting accumulated or drained in subperiosteal abscess or fistula which leads to the reduction of pressure in middle ear cleft, so chances of intracranial spread is less. According to data next most common complication was facial nerve paralysis in this study which was present in 20 % cases. This facial nerve paralysis incidence varies from study to study (Osma et al 2000) found 12.8% facial nerve paralysis (kangsanarak et al 1993) found 58% facial nerve paralysis cases.

Most common intracranial complication was meningitis which was 16.6% but meningitis incidence varied from study to study like (Osma et al 2000) and (yorgancilar E et al 2013). As per the literature there are many more complications associated with CSOM like different types of abscesses like sigmoid sinus thrombosis, subdural abscesses, space occupying CP angle abscess. But in our study, none was reported as super speciality facility was yet to be started.

Conclusion

In this we could find that there was a change in CSOM behaviour in terms of complications in pre-pandemic and pandemic period. Study shows rise in complication rate from 7 cases during the pre-pandemic times to 23 cases during pandemic times. This shows the importance of timely intervention which should be available to treat common diseases like CSOM to avoid the possible complications and their sequelae. All sorts of complications which were reported in our study increased, that is extracranial as well as intracranial complications. The probable reasons being, during the pandemic, multiple lockdowns hampered the transport facilities, economically jobs were less to make up for the expenditure for the investigations and treatment. Also, because of the novel disease the priority has been shifted to this pandemic management, also health resources were overburdened. Since our study was done at a new setup and sample size was low, further studies warranted to assess the real relationship with bigger sample size at larger scale and at different centres.

Conflicts of Interest

The author declares no conflicts of interest.

References

- Abada RL, Mansouri I, Maamri M, Kadiri F (2009); Complications of chronic otitis media; *Ann Otolaryngol*; 2009;1-5.
- Dubey SP, Larawin V, Molumi CP (2010); Intracranial spread of chronic middle ear Suppuration; *Am J Otolaryngol*; 2010;31(2):73-7.
- Harker LA (2003); Cranial and intracranial complications of acute and chronic otitis media; In: Snow JB, Ballenger JJ, editors. *Ballenger's otorhinolaryngology head and neck surgery*. 16th ed. Hamilton, Ontario; Decker. 2003;294-316.
- Kangsanarak J, Fooanant S, Ruckphaopunt K, Navacharoen N, Teotrakul S (1993); Extracranial and intracranial complications of suppurative otitis media: report of 102 cases; *J Laryngol Otol*. 1993;107:999-1004
- Mustafa A, Heta A, Kastrati B, Dreshaj SH (2008); Complications of chronic otitis media with cholesteatoma during a 10-year period in Kosovo; *Eur Arch Otorhinolaryngol*.2008;265 (12):1477-82
- Osma U, Cureoglu S, Hosoglu S (2000); The complications of chronic otitis media: report of 93 cases; *J LaryngolOtol*; 2000;114:97-100.
- Sharma N, Jaiswal AA, Banerjee PK (2015); Complications of Chronic Suppurative Otitis Media and Their Management: A Single Institution 12 Years Experience; *Indian J Otolaryngol Head Neck Surg*; 2015;67:353-60
- Verhoeff M, Van der Veen EL, Rovers MM, Sanders EA, Schilder AG (2006); chronic suppurative otitis media: a review; *Int J Pediatr Otorrhinolaringol*; 2006; 70:1-12.
- Yorgancılar E, Yıldırım M, Gun R, Bakir S, Tekin R, Gocmez C et al (2013); Complications of chronic suppurative otitis media: a retrospective review; *Eur Arch Otorrhinolaringol*. 2013;270:69-76.
- World Health Organization (2012); Chronic suppurative otitis media; Burden of illness and management options; 2004.[http://www.who.int/entity/pbd/deafness/activity.es/hearing_care/otitis media.pdf](http://www.who.int/entity/pbd/deafness/activity.es/hearing_care/otitis%20media.pdf); Accessed on 3 May 2012.