

**Retrospective Clinico-epidemiological study of cases of acute suppurative otitis media attending ENT OPD of tertiary care centre in upper Assam region**

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**Abstract**

**Introduction:** Despite a recrudescence in the incidence of otitis media in the past three decades, related to the increasing use of daycare centres for infants and children, there has been a general tendency in the past 10 years. In upper Assam region there is a huge burden of these cases so we did a retrospective study on ASOM cases coming to otorhinolaryngology outpatient department.

**Material and Methods:** This retrospective study was performed at Assam medical college Dibrugarh Assam from period of February 2019 to February 2020. This tertiary care centre serves patients of Upper Assam

region for variety of socioeconomic classes with approximately 150 patients seen each day.

**Results:** Maximum patients were seen in age group birth to 10 years (24.4%). Bimodal peak was seen in age distribution of cases. Age group 31-40 years had 22.1% cases. Minimum patients were seen in age group 71-80 (0.6%). Maximum patients were from Dibrugarh district of Assam (60.4%).

**Discussion:** Bimodal peak was seen in age distribution of cases i.e. 24.4% cases below 10 years and 22.1% cases in 31-40 years. Minimum patients were seen in age group 71-80 (0.6%). This suggests that their lack of hygiene, poor nutrition among school going children with lack of education, damp weather of this region.

**Conclusion:** This clinic-epidemiological study has highlighted the burden of disease in this region and the need of health department to educate local population about the importance of healthy lifestyle in prevention of ASOM, early diagnosis and treatment.

**Keywords:** ASOM, otorrhea, otalgia, epidemiology, prevalence, AOM

### **Introduction**

Acute otitis media (AOM) without perforation involves acute suppurative inflammation with local and systemic symptoms and signs, including otalgia, otorrhea, fever, irritability, anorexia, vomiting or diarrhea. The tympanic membrane bulges and is usually opaque, and pneumatic otoscopy reveals little mobility. AOM with perforation refers either to AOM that has perforated the tympanic membrane and caused discharge or otorrhea from the middle ear within 7 days of infection, or to the presence of discharge through a tympanostomy tube (also known as a ventilation tube or “grommet”) on an acute basis.<sup>1</sup>

The overlap in the symptoms of the concurrent viral infection, obviously makes it more difficult to distinguish between symptoms associated with different bacteria. Furthermore, individual children are likely to react differently to a case of AOM. It is quite plausible that differences in the individual inflammatory reaction to the viral and bacterial pathogens could cause more variation in the symptoms and signs of AOM than the different bacteria as such. Host immunity against the pathogens may also affect the clinical pattern of the disease. Furthermore, subjective differences in clinical assessment between observers increase variation in the data. Because of these factors, potential minor clinical differences in cases of AOM due to different causative organisms are easily obscured even in large series<sup>2</sup>.

Despite a recrudescence in the incidence of otitis media in the past three decades, related to the increasing use of daycare centres for infants and children, there has been a general tendency in the past 10 years to reduce immediate antibiotic treatment for AOM for children aged over 2 years, exercising a “wait and see” policy.<sup>3</sup> This is a retrospective study to note the epidemiology and clinical presentation in patients of acute suppurative otitis media in upper Assam region and the stage of ASOM at which the patients present to the outpatient department in our institution.

### **Material and methods**

This retrospective study was performed at Assam Medical College, Dibrugarh, Assam from period of February 2019 to February 2020. This tertiary care centre serves patients of Upper Assam region for variety of socioeconomic classes with approximately 150 patients seen each day, including 30 diagnoses of AOM per month.

Eligible study participants were all patients diagnosed with acute suppurative otitis media attending the otorhinolaryngology outpatient department of Assam medical college, Dibrugarh from February 2019 to February 2020.

The written & informed consent was taken from all patients. Ethical clearance was taken from concerned ethical committee.

The data collected was tabulated in Microsoft excel worksheet and computer-based analysis was performed using the statistical product and service

### **Results**

The current study was a retrospective hospital-based study, carried out from February 2019 to February 2020 involving 298 subjects. Out of which 150 were females and 148 males. With sex ratio female: male of 1.01:1 shown in (Table 1).

Age group was from 2 months to 78 yrs. Maximum patients were seen in age group birth to 10 years (24.4%). Bimodal peak was seen in age distribution of cases. Age group 31-40 years had 22.1% cases. Minimum patients were seen in age group 71-80 (0.6%) as shown in table no 2.

Maximum patients were from Dibrugarh (60.4%) followed by Sivsagar (10.7%) (chart no 1). 9.3% cases were from Islam community and 90.7% were from Hindu community (table no 4).

According to modified Kuppaswamy scale 67.7% cases were from lower and lower middle class. Only 5.3% cases were from upper class (table no 5). 83.8% cases had non vegetarian diet. 16.2% cases had vegetarian diet (table no 4).

43.2% patients were seen in rainy season and minimum patients were seen in spring season (9.3%) (chart no 2).

In age group of 0 to 10 years 89% cases complained of earache, 80.8% cases complained of otorrhea, 76.7% cases had rhinorrhea, 95.8% cases were irritable as shown in chart no 3.

53.6% patient presented with perforated Tympanic membrane, 32.8% with inflamed & red tympanic membrane, 7% normal and 3% bulling tympanic membrane as shown in table no 6. Hearing loss in all cases was mild conductive hearing loss (25-30 dB) as recorded on pure tone audiometry.

### Discussion

Acute otitis media (AOM) without perforation involves acute suppurative inflammation with local and systemic symptoms and signs, including otalgia, otorrhea, fever, irritability, anorexia, vomiting or diarrhea. The tympanic membrane bulges and is usually opaque, and pneumatic otoscopy reveals little mobility. AOM with perforation refers either to AOM that has perforated the tympanic membrane and caused discharge or otorrhea

from the middle ear within 7 days of infection, or to the presence of discharge through a tympanostomy tube (also known as a ventilation tube or “grommet”) on an acute basis.

J.G. Liese et al in their study found that the overall incidence rate of AOM episodes as diagnosed by a physician during the prospective study was 256/1000 person-years (95% CI 243–270). The incidence rate was lowest in Italy (195, 95% CI 171–222) and highest in Spain (328, 95% CI 296–363). The incidence rate was higher in the 0–2 years age group (299, 95% CI 279–320) than in the 3–5 years age group (212, 95% CI 195–230). In Italy incidence rates were very similar between the age groups. The incidence rate of confirmed AOM was 90 (95% CI 82–98), and the incidence rate of probable AOM was 167 (95% CI 156–178).<sup>4</sup> In our study out of which 150 were females and 148 males. With sex ratio female: male of 1.01:1 suggesting a female preponderance in this particular disease in Upper Assam region. Age group was from 2 months to 78 yrs. Bimodal peak was seen in age distribution of cases i.e. 24.4% cases below 10 years and 22.1% cases in 31-40 yrs. Minimum patients were seen in age group 71-80 (0.6%). This suggests that in school going children lack of hygiene, poor nutrition, lack of education, damp weather of this region favours the development of ASOM. Out of 73 cases 34% cases were below 1 year which improved after counselling on breast feeding techniques. 64.4% cases attending otorhinolaryngology outpatient department were from Dibrugarh and were of mixed religion. 67.7% cases belonged to lowering lower middle class supporting the role of poor hygiene in development of ASOM. 79.1% patients present to otorhinolaryngology department from month of July to February that is in rainy and winter season. Owing to the damp weather of this

region all-round the year the cases can be seen throughout the year. Pang KP et al in their study found that the clinical features of OME are often nonspecific, which is the reason for delay in seeking treatment. They may present with mild intermittent ear pain, fullness, or “popping” in older children or ear rubbing and sleep disturbances in infants. Very often, hearing loss is the presenting complaint even when not specifically described by the child. The parents may report that the child is not responding as well as before to sounds or is turning the TV volume too high. They may also present with recurrent episodes of AOM with persistent OME between episodes. Other infrequent complaints include delayed speech or language development, misarticulation, problems with school performance, problems with maintaining balance, and unexplained clumsiness.<sup>5</sup>

The onset of ASOM is not only accompanied by symptoms and signs of otalgia, irritability or fever but also have a short-lived defect in the tympanic membrane. 82.5% of the cases with ASOM were found to have otalgia and 2.5% of these cases were observed to have tympanic membrane perforation. Any chronic defect in tympanic membrane which is accompanied by recurrent otorrhoea can lead to the onset of CSOM.<sup>6</sup>

Ramakrishnan K. et al in their study mentioned that symptoms of acute otitis media (e.g., fever, headache, irritability, cough, rhinitis, listlessness, anorexia, vomiting, diarrhea, pulling at the ears) are common in infants and young children. Otalgia is less common in children younger than two years and more common in adolescents and adults.<sup>7</sup> Detection of middle ear effusion by pneumatic otoscopy is key in establishing the diagnosis of acute otitis media. The tympanic membrane normally is convex, mobile, translucent, and intact; a normal color and mobility of the membrane

indicate that otitis media is unlikely (negative likelihood ratio [LR-], 0.03).<sup>8</sup> A bulging membrane greatly increases the likelihood of otitis media (LR+, 20.3), as do impaired mobility of the membrane (LR+, 4.7) and a distinctly red membrane (LR+, 2.6), albeit to a lesser extent.<sup>9</sup> In our study maximum patients came with chief complaint of earache followed by otorrhea. At the time of presentation in our institution 53.6% cases had perforated tympanic membrane. This suggest that lack of proper treatment in periphery, lack of awareness among the patients, late presentation for proper treatment is still a problem in this region. Leung et al in their study mentioned that the Acute otitis media affects over 80% of children before their third birthday and 30 to 45% of these children have suffered two or more episodes. Streptococcus pneumoniae, non typable Haemophilus influenzae, and Moraxella catarrhalis are the most frequently isolated middle-ear pathogens. The diagnosis is based on acute onset of symptoms such as otalgia and fever, middle ear inflammation such as erythema of the tympanic membrane, and middle ear effusion. The choice of treatment method depends on the age of the child, laterality, and the severity of the disease.<sup>10</sup> There is a need to establish mobile camps for regular screening of school going children and educating their parents and teachers about the ear hygiene and alarming signs of ASOM to bring the patient to proper health facility. This step will help prevent the catastrophic effect of sequels of ASOM that will eventually impact the life of that patient in long run.

### Conclusion

Otitis media is an inflammation and infection of middle ear cleft. It remains a major public health problem, accounting for 10 to 15% of all childhood medical visits. We would like to conclude that high incidence of

ASOM in Upper Assam region is due to Low socioeconomic status, lifestyle, education and definitely the weather of this terrain favours development of ASOM. This clinic-epidemiological study has highlighted the burden of disease in this region and the need of health department to educate local population about the importance of healthy lifestyle in prevention of ASOM, early diagnosis and treatment.

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**Legends Tables and Figures**

Table 1: Sex wise distribution of cases included in study

Sex of patients	Number of patients	% of cases
male	148	49.6%
female	150	50.3%
Total cases	298	

Table 2: Age wise distribution of cases included in study

Age group	Number of patients	% of cases
birth-10	73	24.4%
11-20	40	13.4%
21-30	65	21.8%
31-40	66	22.1%

41-50	35	11.7%
51-60	10	3.3%
61-70	7	2.3%
71-80	2	0.6%

Table 5: socioeconomic status of cases included in study

Modified Kuppuswamy classification	Number of cases	% of cases
Lower class	88	29.5%
Lower middle	114	38.2%
middle	50	16.7%
Upper middle	30	10%
upper	16	5.3%

Chart-1: Region wise distribution of cases

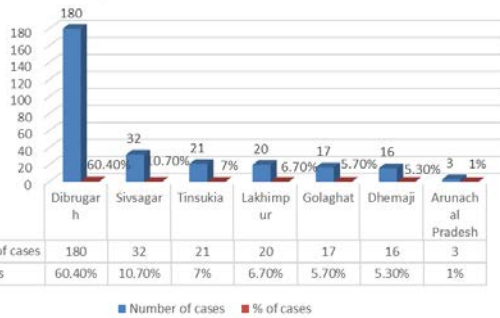


Chart-2: Seasonal variations of cases

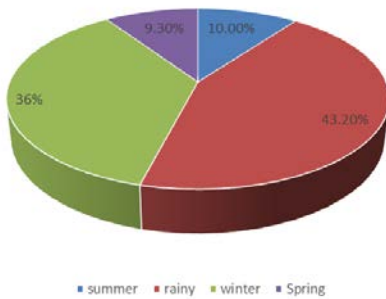


Chart no 3: Clinical symptoms of cases included in the study

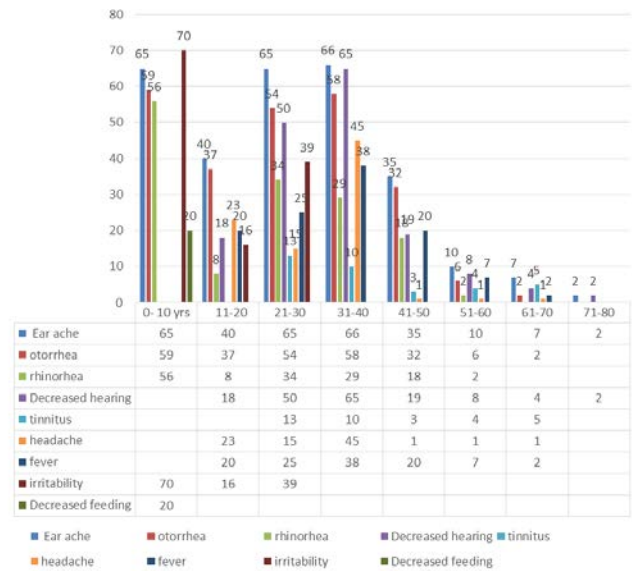


Table 3: religion of cases included in study

Religion	Number of cases
Hindu	270
Islam	28

Table 6: Status of Tympanic membrane at time of presentation

Status of tympanic membrane at time of presentation	Number of cases	% of cases
perforated	160	53.6%
Red & inflamed	98	32.8%
normal	21	7%
bulging	10	3%

Table 4: Food habits of cases included in study

Diet	Number of cases
vegetarian	48
Non vegetarian	250