ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
Index Copernicus Value: 68 . 16
PubMed - National Library of Medicine - ID: 101731606

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 5, Issue – 6, December - 2020, Page No. : 159 - 164

Retrospective Study to Determine Seasonal Variation of Acute Suppurative Otitis Media in Upper Assam Region

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Citation this Article: Mohan Kumar Mili, Anusuya Deb, Shilpi Gupta, Jyotirmoy Phookan, Naba Jyoti Saikia, "Retrospective Study to Determine Seasonal Variation of Acute Suppurative Otitis Media in Upper Assam Region", IJMSIR- December - 2020, Vol – 5, Issue - 6, P. No. 159 – 164.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Introduction : More than 70% of children have experienced at least one episode of AOM by 2 years of age. In the United States, direct and indirect medical expenditures for AOM-related healthcare visits and antibiotic prescription of acute suppurative otitis media.

Material and methods:All the patients diagnosed with acute suppurative otitis media in outpatient department of otorhinolaryngology, Assam Medical College, Dibrugarh from February 2019 to February 2020 constituted the study subject. The study has been carried out with institutional ethical clearance.

Results: Maximum number of females were seen in October 35 cases (11.7%). Minimum male patients were seen in month of April (0 case) and minimum number of female patients were seen in month of February (3cases).

Discussion: Otitis media is a global problem and is found to be slightly more common in males than in females. The specific number of cases per year is difficult to determine due to the lack of reporting and different incidence across many different geographical regions. The peak incidence of otitis media occurs between six and twelve months of life

Conclusion: This study suggests that there is a clear difference in seasonal variation of presentation of ASOM in upper Assam region. This can be attributed to different epidemiology, pathogenic organism, food

habits, weather, terrain, occupation, lifestyle of this region.

Keywords: Acute suppurative otitis media, seasonal variation, epidemiology, prevalence, ASOM

Introduction

Acute otitis media (AOM) is the most common cause of health care visits among children in the United States. More than 70% of children have experienced at least one episode of AOM by 2 years of age. In the United States, direct and indirect medical expenditures for AOM-related healthcare visits and antibiotic prescription of acute suppurative otitis media in all age group are estimated to be $3.5 billion in this age group.[1] WHO estimated that 28 thousand deaths every year are attributable to complications of OM. The hearing impairment produced by otitis media affects intellectual performance, which has been demonstrated by several studies. Long-term effects on overall intellectual, linguistic and psychosocial development have not been consistently observed.[2] Epidemiological data on acute otitis media (AOM), an infectious disease frequently affecting children, are lacking in most of the developing countries due to its variability in incidence depending on geographical location and seasonal occurrence.

The vulnerability of Otitis Media (OM) in relation to etiopathogenesis is due to the involvement of multiple factors such as demographic, genetic, environmental and other health related factors like infections, allergy, asthma, eustachian tube dysfunction, cleft palate, and adenoid hypertrophy. The presence of fluid in middle ear leads to long term morbidity with varying degrees of hearing loss in children and adults.[2] OM was more commonly observed during the autumn and winter as against the summer in both northern and southern hemispheres.[3] A study by Sophia et al. of pre-school children in rural India provided population-based data from a relatively large sample of 800 children and found the prevalence of OM to be 9.2% (54/587) in children 0–5 years old. In Pakistan, Tariq et al. provided data from an observational hospital-based study on the prevalence of AOM in 1724 children <2 years of age. The prevalence of AOM was reported at 4.4% (75/1724).[4]

The prevalence of OM varies widely and causes a serious burden of illness and hearing loss globally. However, studies on prevalence of OM are limited in Indian population. Most of the earlier reports indicated the prevalence of OM in younger age group but there is scarcity of data available in other age groups.[5] The prevalence rate of ASOM in India is around 17–20%, CSOM is 7.8% and of OME is not yet known.[6] Therefore this study is aim to determine the seasonal variation of ASOM retrospectively in patients of all age group attending tertiary care Centre in Upper Assam region.

Materials and Methods

All the patients diagnosed with acute suppurative otitis media (ASOM) in outpatient department of Otorhinolaryngology, Assam Medical College, Dibrugarh from February 2019 to February 2020 constituted the study subject. The study has been carried out with institutional ethical clearance. The written and informed consent were taken from all patient for participation in study. The data collected was tabulated in Microsoft Excel Worksheet and computer-based analysis was performed using the Statistical product and service solutions (SPSS) 20.0 software (SPSS, Chicago, Illinois, USA) and Microsoft Excel 2019. The categorical variables were summarized as proportions and percentages.

Results

Out of 298(n) OM patients, 49.6% were males and 50.3% were females. High female preponderance with male to female ratio of 0.9:1 was noticed as shown in Table1.

Maximum number of male patients were seen in month of September

42 cases (14%). Maximum number of females were seen in October 35 cases (11.7%). Minimum male patients were seen in month of April 0 case and minimum number of female patients were seen in month of February 3 cases as shown in chart no 1.

The age group of study population was from 1 yr to 75yrs. The maximum patients were seen in age group 1-10yrs (24.4%) and mean age was 9+1.5 as shown in chart 2. In age group 1-10yrs maximum number of patients were seen in month of September (26%).

Minimum patients were seen in month of April (1.006%). In age group 71-80yrs minimum patients were seen (0.6%) as shown in the chart 2. Maximum patients were from Dibrugarh District which was 180 cases (60.4%). Maximum number of cases in Dibrugarh came in month of October (21.6%) and September (21.6%) as shown in chart 3.

Discussion

Acute otitis media (AOM) is a very common condition and a leading cause of health care visits and antibiotic prescription. Studies carried out in developed countries show that by their third birthday 80% of children will have experienced at least one episode of AOM and 40% will have six or more recurrences by the age of seven years .[6] Early diagnosis and treatment of AOM, including the rational use of antibiotics should be improved, by incorporating clinical algorithms in current outpatient guidelines and by supporting the use of otoscopy in primary care practice. By doing this, prevention of complications and long-term sequelae of AOM will be greatly strengthened. This is especially important for children under five, who bear 51% of all cases of AOM, and are particularly affected by the consequences on language development and school performance. It is also particularly relevant for the poorest countries. We found that AOM incidence in Sub-Saharan Africa, South Asia and Oceania is two to eight times higher than in the remaining regions. Here, co-morbidity with malnutrition, HIV and exposure to contaminated water greatly increases the risk of developing CSOM and its complications.[7]

In our study, Out of 298 OM patients, 49.6% were males and 50.3% were females. High female preponderance with male to female ratio of 0.9:1 was noticed as shown in chart 1.This a is different finding noted in our study as most studies have found male preponderance.

Kumari S et lain their study found that Out of 2602 OM patients, 58.6% (1525) were males and 41.4%1077) were females. High male preponderance with male to female ratio of 1.4:1 was noticed. The mean (SD) age of OM subjects is 32.9 (17.73) years and mean (SD) age of onset is 8.3 (6.73) years in 1–15 years, 30.0 (5.61) years in 15–30 and 53.5 (9.3) years in >30 years age group. [8] Moupachi SS et al in their study found that Most patients 39.19 % belong to 11 - 20 year age group with age ranging from 4 years to 70years followed by 22.3 % in 2 1 - 30 age groups.[9]

In our study the age group of study population was from 1 yrs to 75yrs. The maximum patients were seen in age group 1-10yrs (24.4%) and mean age was 9+1.5 as shown in chart 2. This finding was consistent with other studies in India.

Stockman C et al in their study mentioned that RSV, influenza, and human metapneumovirus showed

distinctive and variable winter peaks. Ninety-eight percent of positive RSV and 93% of positive human metapneumovirus detections occurred between November and April. The seasonality was somewhat different for influenza, with only 56% of detections occurring between these months. This was due to two waves of the 2009 H1N1 pandemic in May and September of 2009. With the exception of the 2003-2004 and 2009-2010 seasons, peak RSV, influenza, and human metapneumovirus activity overlapped to variable degrees. The seasonality of adenovirus, rhinovirus, and parainfluenza was less pronounced.[9] During the study period 271,268 children residing in Utah were diagnosed with AOM at an Intermountain facility. There was an average of 30,141 AOM diagnoses per year, with the largest number (34,934) occurring during the 2003-2004 season. AOM diagnoses exhibited moderate seasonality, with 66% of visits identified between November and April of each year. The majority of AOM visits (77%) were among children younger than 5 years of age.[10]

In our study we found that in age group 1-10yrs maximum number of patients were seen in month of September (26%). Minimum patients were seen in month of April (1.006%). In age group 71-80yrs minimum patients were seen (0.6%). In our study we also found that maximum cases occurred in month of September. 11.7% cases were diagnosed in summer season, 55.8% in rainy season, 22.8% in autumn, 13% in winter season and 8.3% in spring season. From November to April month 27.1% cases were seen. Otitis media is a global problem and is found to be slightly more common in males than in females. The specific number of cases per year is difficult to determine due to the lack of reporting and different incidence across many different geographical regions. The peak incidence of otitis media occurs between six and twelve months of life and declines after age five. Approximately 80% of all children will experience a case of otitis media during their lifetime, and between 80% and 90% of all children will experience otitis media with an effusion before school age. Otitis media is less common in adults than in children, though it is more common in specific sub-populations such as those with a childhood history of recurrent OM, cleft palate, immunodeficiency or immunocompromised status, and others.[11]

This study suggests that there is a clear difference in seasonal variation of presentation of ASOM in upper Assam region. This can be attributed to different epidemiology, pathogenic organism, food habits, weather, terrain, occupation, lifestyle of this region. This study is subject to several limitations. First, this study was not designed to demonstrate a causal relationship between etiological factor and the development of ASOM. Second the clinical presentation of patient coming to our outpatient department has not been studied. There should be a further study to delineate the causative microorganisms in Upper Assam region.

Conclusion

Our study was based in a single geographic region which is located at the bank of Bhramputra river in Upper Assam. The local weather of this region renders a different seasonal variation in Acute suppurative otitis media cases in comparison to rest of India. In our study we found that maximum cases occurred in month of September and in age group less than 10 yr. There is a need to educate peoples about the course of this disease and how to prevent it this vulnerable age group. Early diagnosis is a key to prevention of sequels of ASOM.

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Legends charts