

Epidemiology of Acute Suppurative Otitis media in Nigerian Children

O Olubanjo

Citation

O Olubanjo. *Epidemiology of Acute Suppurative Otitis media in Nigerian Children*. The Internet Journal of Pediatrics and Neonatology. 2007 Volume 8 Number 1.

Abstract

Otitis media is one of the most common childhood infections with most children presenting only when the ears begin to discharge. This study was aimed at determining the incidence of ASOM and factors associated with the disease. The prospective study was conducted at the Wesley Guild hospital, Ilesha over a one year period from 2004 to 2005. It included children aged 1 month to 14 years who visited the general paediatric outpatient clinic with discharging ears. Of the 10,303 children who visited the clinic, 104 subjects were included in the study giving an incidence of 1.01%. A higher proportion belonged to low social class, 75% lived in poorly ventilated and overcrowded houses with 97.1% exposed to indoor pollution. The mean age at introduction of other feeds was 5.103 \pm 1.94 and mean age at stoppage of breastfeeding was 16.68 \pm 2.87 months. 89% had unilateral disease while 93% had central perforation of the ear drum. Further studies will be required to confirm these associated factors as risk factors for the disease.

INTRODUCTION

Otitis media is one of the most common childhood infections. It is the most common diagnosis made by otolaryngologists among children in Nigeria¹, yet its exact prevalence in many societies is not known². Otitis media is known to be a spectrum of disease ranging from an acute non suppurative otitis media to chronic transformation of the disease which includes chronic suppurative and nonsuppurative diseases particularly when it is not treated or partially treated². Because of the wide range of presentation of the disease, most studies have been centered on the chronic nature of the disease in the tropics while there have been fewer studies on the acute nature of the discharging ears. In view of the dearth of studies on acute suppurative otitis media defined by the transient perforation of the tympanic membrane and formation of pus less than 6 weeks duration³, this study was conducted with the aim of bridging the perceived gap in our knowledge base by looking at incidence of the disease and various epidemiological factors associated with it in our environment.

PATIENTS AND METHODOLOGY

This study is a prospective study and hospital based carried out over a one year period in the general paediatric outpatient department of a hospital in the south west of Nigeria. The study population included children aged 1 month to 14

years who presented with discharging ears less than 6 weeks duration. Children who presented with ear discharges limited to the external ears were excluded from the study. The history and otoscopic examination obtained from the subjects were documented on structured questionnaires. Ethical clearance was obtained from the hospital and consent was also obtained from parents of subjects.

RESULT

Of the 10,303 children who visited the paediatric outpatient department over a one year period, 104 children met the inclusion criteria accounting for an incidence of 1.01%.

Gender: Of the 104 subjects in this study, 49(47.1%) were males while 55(52.9%) were females giving a slight female preponderance with a male to female ratio of 0.9:1

Figure 1

Table 1: Age specific distribution of subjects

Age of children(months)	Number of children	Percentage (%)
1-24	62	59.6
25-48	34	32.7
49-72	5	4.8
73-96	2	1.9
97-120	1	1.0
121-144	0	0
145-168	0	0

Figure 2

Table 2: Social class distribution of parents of children in this study

Social class distribution	Number of children	Percentage (%)
I	7	6.7
II	12	11.5
III	27	26.0
IV	56	53.8
V	2	1.9

Exposure to smoke: One hundred and one subjects were exposed to smoke from kerosene stove and wood smoke used for cooking within the home environment while 3(2.9%) denied exposure to this form of indoor pollution. All subjects denied indoor exposure to cigarette smoke.

Type of housing: of the 104 subject in this study, 26(25%) lived in well ventilated and not overcrowded houses (flats) while 78(75%) lived in poorly ventilated and overcrowded houses usually referred to as 'face-to-face' in the community.

Nutritional history: Amongst the subjects whose ages were less than 24months, 44(71.1%) were still breastfeeding as at the time this study was conducted while 18(29.0%) had stopped breast feeding. The mean age at stoppage of breast feeding was 16.68+/-2.87months while the mean age at introduction of other feeds was 5.103+/-1.94months. On the other hand 54(87.1%)denied use of feeding bottles while 8(12.9%) used feeding bottles prior to presentation.

Characteristic of the disease: Unilateral disease accounted for 89(85.6%) while 15(14.4%) had bilateral disease .Ninety -three(91.2%) had central perforation while 9(8.8%) marginal/attic perforation. The tympanic membrane could not be visualised in two of the subjects.

Figure 3

Table 3: Clinical presentation of subject with ASOM

Clinical features	Number present(%)	Number absent(%)
Fever	48(46.2%)	56(53.8%)
Ear pain	40(38.5%)	64(61.5%)
Upper respiratory infection	54(51.9%)	50(48.1%)
Enlarged tonsils	37(35.6%)	67(64.4%)

DISCUSSION

The prevalence of ASOM in this study was 1.01%, which is lower than the 2.4% reported by Ako-Nai₄ in a similar study conducted in a comprehensive health center. The difference may have been due to the higher denominator of patients using the health facility (Wesley Guild hospital Ilesa) where this study was conducted compared to that of Ako-Nai. This facility, which was initially a missionary hospital but now government owned delivers primary, secondary and tertiary level of care to the semi-urban populace of Ilesa and environ. Similarly the prevalence in this study is comparable

to the community based study by Zakzouk who reported a prevalence of 1.05% amongst Saudi Arabian children in a nationwide survey₅.

OM is known to be a childhood disease with high incidence in the first 3 years of life₆. This is supported by the finding of a higher incidence in children below two years of age in this study. There was also a fall in the incidence of ASOM in the older aged children (table I). This findings is consistent with reports of other existing literature_{7, 8} and supports the hypothesis that most adult who have otitis media must have had it when they were younger.

There was a slight female preponderance amongst children with ASOM with a male to female ratio of 0.9:1. The reason for this gender difference is not known. This finding agrees with the report of Amusa et al₉ but contrasted with the report of Giebink and Quie₁₀ who had reported a male preponderance.

The majority of subjects in this study fell into the low socio economic group (class IV) which agrees with other existing literature_{1, 11}. The socio economic classification used in this study was based on the model developed by Oyedeji₁₂ which uses educational qualification and occupation of both parents to assigned them to their social class. Poverty and poor medical seeking behavior may have contributed to the dominance of this socioeconomic group in the epidemiology of ASOM in the locality where this study was conducted. Paradoxically, fewer subjects fell into the social class V which is the lowest class. The reason may be due to extreme poverty and lack of education which characterizes this group thereby hindering them from seeking and utilizing orthodox care in hospitals in the urban area since the two subjects in this category were from surrounding villages.

Over 74% of the subjects in this study lived in overcrowded and poorly ventilated houses usually referred to as 'face-to-face' in the community. These types of houses consist of many rooms housing many families with a central passage way in which they share same toilet, bathroom and kitchen. This type of housing which is usually overcrowded may contribute to the higher proportion of children with ASOM. Amusa in her work had reported significant association between overcrowding and Otitis media₈ while Bruneau et al₁₃ found no association. In addition to this, most of the parents of the subjects do their cooking with kerosene and wood indoor thereby exposing the subject to noxious agents from the biomass smoke which is known to affect the respiratory epithelium thereby predisposing them to

respiratory tract infection and increasing the risk of OM₁₄. Another interesting finding is that the entire subject denied exposure to cigarette smoke. The reason for this is not clear-cut, but it may not be unconnected with the aggressive campaign of the government on the dangers of smoking to the health of the individual in the community.

Among subjects less than 24 month of age in this study, 71.1% were still breast feeding at the time of presentation and mean age at stopping breast feeding was 16.68 \pm 2.87 months with 87.1% denying the use of bottle feeding. It was also interesting that most of the children were exclusively breast fed for almost 6 months as recommended by world Health Organization (mean age at which other feed were introduced was 5.103 \pm 1.94 month). These findings tend to contrast with other existing literature who had reported a reduction in the incidence of OM in children who were breastfed^{15, 16, 17} and put to question the protective effect of breast milk as postulated by Newburg¹⁷.

Unilateral disease with central perforation was more common compared to bilateral diseases and marginal perforation in this study. The reason for this difference is not clear. This agrees with other existing literature which had reported similar findings in chronics suppurative otitis media⁶.

Other associated clinical features of ASOM in this study includes fever (46.2%), ear pain (38.5%), URTI(51.9%) and enlarged tonsils(35.6%). A slightly higher proportion of subject presented with signs and symptoms of URTI which agrees with other existing literatures who had reported that URTI increases the risk of OM. Ruuskanen reported a strong correlation between AOM and viral respiratory infections¹⁸. Also, the proportion of subject with fever in this study cannot be explained solely by ASOM bearing in mind that this study was conducted in a region endemic for malaria for which some were treated. Amusa had reported incidence of AOM to be 29% amongst febrile children in the tropics⁹.

In conclusion, higher proportion of subjects with ASOM practiced exclusive and prolonged breastfeeding as advocated by world Health Organization, belonged to the low socioeconomic class, lived in poorly ventilated and overcrowded houses and were exposed to indoor pollution. Further studies to confirm these factors as risk factors for the

disease in this locality are advocated.

ACKNOWLEDGEMENT

I will like to appreciate the contribution of my colleagues for their advice and contributions during the data collection of this study. My appreciation also goes to the nurses who ensured that the study ran smoothly.

References

1. Okafor BC. The chronic discharging ear in Nigerians. *J laryngol Otol* 1984; 98: 113-9
2. Berman S. Otitis media in developing countries. *Paediatr* 1995; 96(1): 126-131
3. Kenna MA. Treatment of chronic suppurative otitis media. *Otolaryngol Clin North Am.*, 1994, 27 (3): 457-472.
4. Ako-nai AK, Oluga AD, Adejuyigbe EA, Amusa YB. The characterization of bacterial isolates from acute Otitis media in ile-ife, south western Nigeria. *J Trop Pediatr* 2002; 48: 15-22
5. Zakzouk SM, Jamal TS, Daghistani KJ. Epidemiology of acute otitis media among Saudi children. *Int J pediatr otorhinolaryngol* 2002; 62: 219-22
6. Ologe FE, Nwawolo CC. Prevalence of chronic suppurative otitis media among school children in a rural community in Nigeria. *Nig Postgrad Med J* 2002; 9: 63-6
7. Amusa YB, Ijaduola IK, Onayade OO. Epidemiology of otitis media in a local tropical African population. *WAJM* 2005; 24 (3):227-30
8. Obi CL, Enweani IB, Giwa JO. Bacterial agents causing chronic suppurative otitis media. *East Afr Med J.* 19195; 72: 370-2
9. Amusa YB, Ogunniyi TA, Onayade OO, Okeowo PA. Acute otitis media, malaria and pyrexia in the under five age group. *WAJM* 2005; 24(3): 239-241
10. Giebink GS, Quie PG. Otitis media: The spectrum of middle ear inflammation. *Ann. Rev. Med* 1978; 29: 306
11. Moriniere S, Soin C, Lescanne E, Plyoyet MJ. Epidemiology of otitis media with effusion. *Rev Pract* 1998; 48: 838-42
12. Oyedeji GA. Socioeconomic and cultural background of hospitalized children in Ilesa. *Nig J Pediatr* 1985; 12: 111-117
13. Bruneau S, Ayukawa H, Proulx JF, Baxter JD, Kose K. Longitudinal observations(1987-1997) on the prevalence of middle ear disease and associated risk factors among Inuit children of Inukjuak, Nunavik, Quebec, Canada. *Int J Circumpolar Health* 2001; 60: 632-9
14. Schwela D. Cooking smoke: a silent killer. *People planet.* 1997; 6(3): 24-25
15. Teele DW, Klein JO, Rosner B. Epidemiology of otitis media during the first seven years of life in children in Greater Boston: a prospective, cohort study. *J Infect Dis* 1989; 160: 83-94
16. Engel J, Anteunis L, Volovics A, Hendriks J, Marres E. Risk factors of otitis media with effusion during infancy. *Int J pediatr otorhinolaryngol* 1999; 48: 239-49
17. Newbug DS. Human milk glycoconjugates that inhibit pathogens. *Curr Med Chem.* 1999; 6(2): 117-2
18. Ruuskanen O, Arola M, Mertsola J et al. Acute otitis media and respiratory virus infection. *Pediatr infect Dis J* 1989; 8(2): 94-9

Author Information

Olasunkanmi Oladapo Olubanjo, FWACP

Consultant Paediatrician, Kupa Medical Center, Department of Paediatrics and Child Health, Wesley Guild Hospital unit, Ilesa, Obafemi Awolowo University Teaching Hospital Complex