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Prevalence of acute otitis media among children with pyrexia in a Nigerian hospital

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Abstract

Objective: This was to determine the prevalence of acute otitis media in children with pyrexia in an area with malaria endemicity and also the relevance of socio-economic factors on AOM.
Methods: This prospective study was conducted between January 2004 and June 2005 at the emergency paediatric unit of the hospital among children aged 0–15 years presenting with pyrexia. All the children had full ENT examinations in addition to the evaluation by the emergency paediatricians. Diagnosis of AOM was based on history, examinations and otoscopic findings.
Results: Two-hundred children with pyrexia were seen and the age range was 3 months to 15 years (mean 4.73). The male/female ratio was 1.7:1.03 years; 32 had features of AOM. Two third of the children were from the low socio-economic class.
Conclusion: AOM with late presentation in the suppurative stage of the disease is a common cause of pyrexia in children with a male preponderance and two third of the children were from the low socio-economic status. There is the need for otoscopic examinations of all pyretic children as the resultant hearing loss is related to difficulties in language acquisition in children below 2 years of age with effects on literacy and school achievement.

Keywords: Prevalence; Acute otitis media (AOM); Pyrexia; Malaria; Otoscopy

1. Introduction

Acute otitis media (AOM) is said to be the most frequent specific diagnosis in children who are febrile in the United States, it is often over diagnosed by physicians and emergency doctors [1]. It is one of the most common childhood infections and has been found to account for every third office visit in paediatric practice [2]. The diagnosis is usually based on the clinical symptoms of otalgia, often fever with irritability and by clinical otoscopy [3].

Acute otitis media is found in all ages, but commoner in children aged 6 months to 3 years [1], 50% of them having an episode before their first birthday and 80% having an episode by their third birthday [1]. Acute otitis media is quite common among children with pyrexia and fever is the most common reason parents bring their children to the emergency department [4]. Common causes of fever in the tropics, include malaria, respiratory tract infections (upper and lower), urinary tract infections and bronchopneumonia. Acute otitis media is most likely to develop in children from poor socio-economic conditions with poor or inadequate health services and males are more affected than females [1,5,6]. However, no specific causative factors have been found [1,5,6].

Various epidemiological studies in the US, reported a prevalence rate of AOM within the first 2 years of life of

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17–20%, and 90% of them must have had at least one reported episode by the age of 2 years [7,8]. In Canada, prevalence among aboriginal youths in Northern Canada is four times more compared with those in the South [9]. Among Saudi children it is 10.5%, over 70% before second birthday [10]. In a study at Finland, Thaibodeau et al. in 1978, reported a prevalence rate of 23% among children with pyrexia aged 1–5 in an emergency room [11].

In developing tropical countries, AOM is quite common, remaining a major contribution to childhood morbidity and mortality due to late presentation, lack of access to primary health care and unaffordability of antibiotics [12]. Malaria is endemic in these places with majority of children with pyrexia being diagnosed as such [13]. Knowledge of the prevalence of AOM in developing country is scanty [13], hence this survey is to determine the prevalence of AOM among children with pyrexia most of whom would have been treated as cases of malaria and the relevance of socio-economic factors on acute otitis media.

2. Patients and methods

This cohort study among 200 children, aged 0–15 years with pyrexia was conducted at the emergency paediatric unit of the University of Ilorin teaching hospital, Ilorin, Nigeria between January 2004 and June 2005. Ethical clearance approval was secured from the hospital and consents from parents/guardians were also obtained. Structured questionnaires were administered and information obtained included: Demographic data; symptoms of fever, ear ache, otorrhoea, hearing impairment, irritability, diarrhoea and vomiting, socio-economic factors (parental education, occupations, monthly income with the type of accommodation) Pyrexia was taken as a temperature of $\geq$38 °C (oral) and children with temperature of 38 °C and above were recruited into the study. All of them had their ears examined using hand held battery powered otoscope by the principal investigator and senior registrars in otolaryngology within 2 h of presentation at the pediatric emergency unit in addition to the examinations carried out by the emergency paediatrician registrar/consultant and the findings entered into the study proforma.

At clinical otoscopy, finding of any of the following signs singly or in combination were considered suggestive of AOM in this study: membrane dullness, hyperaemia or bulge; loss of light reflex and presence of perforation (s) with ear discharge. Subjective hearing assessment (Weber's and Rhine's tests) was done with tuning forks of frequency 512 Hz in children 4 years and above who are able to follow instructions for this test.

Diagnosis of AOM was based on clinical, physical examinations and clinical otoscopic findings. Malaria diagnosis was based on the presence of parasites in the thick and thin blood films.

Exclusion criteria were children with otitis externa, chronic suppurative otitis media, and patients with obstructive wax or foreign body in the external auditory meatus, severely ill patients, prior treatment of the pyrexia before presentation at the hospital and current therapy with anti-malaria or antibiotics. All the children with AOM were treated with antimicrobial agents and topical and systemic nasal decongestants. A control group of 100 Children (200 ears) without pyrexia at the paediatric outpatient clinic were examined to assess the state of their eardrums. Data were analysed using Epi-Info 2005-3.3.2 version.

3. Results

Sixty-four of the children seen had features of acute otitis media. The age range was 3 months to 15 years with a mean of 4.73 years. From Table 1, the peak age was 2–5 years (62.5%) and 93.75% of the patients were aged less than 7 years with only two children above 7 years. There were 40 males and 24 females with a male/female ratio of 1.7:1.0.The average family size was 7–8 people with more than three quarter of them living in single room apartments and only a quarter living in two/three bedroom apartments and were mostly civil servants. The parental occupations from Table 2, showed most of them were petty traders (62.5%) with an average monthly income of less than $50, 18.75% were civil servants most of whom were junior workers, who earn an average monthly pay of $60–100 and others, 18.75% were dependants (students and the unemployed).

The key presenting symptoms were otalgia (88%), runny nose (75%) and hearing impairments (44%). While infants and children less than 3 years of age presented with vomiting (63%), diarrhoea (60%) and irritability (25%). Clinical otoscopy, showed mucopurulent discharge in the external auditory meati of 40 children (62.5%) and clear in 24 of the

Table 1
Age distribution of children with acute otitis media.

Age (years)	Number	Percentage (%)
0–1	12	18.8
2–3	24	37.5
4–5	16	25.0
6–7	8	12.5
>7	4	6.3
Total	64	100

Table 2
Occupations of parents.

Occupation	No	Percentage (%)
Trading (petty)	40	62.5
Civil service (government employed)	12	18.8
Student	8	12.5
Unemployed	4	6.3