

Prevalence and Outcome of Otitis Media among Children Attending Usman Danfodio University Teaching Hospital, Sokoto

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Abstract: Otitis Media (Latin word for "inflammation of the middle ear") is the medical term for middle ear infection. Otitis media is a common illness among children. This is characterized by inflammation of the middle ear involving other areas of the temporal bone contiguous to the middle ear, including the mastoid, perilymph air cells, and the petrous apex. Otitis media is one of the commonest reasons for visit to a pediatrician. This study was conducted to determine the prevalence and outcome of otitis media among children attending Usmanu Danfodiyo University teaching hospital, Sokoto.

METHODS: Case notes of patients with otitis media were obtained from the records department of the hospital and data was analyzed using SPSS.

RESULTS: Of the 129 cases reviewed 65(50.4%) were males and 64 (49.6%) were females with age distribution ranging from one (1) month to fifteen (15) years. The commonest mode of presentation was ear discharge (68.2%) followed by ear pain (57.4%), then nasal discharge (37.2%), fever (20.2%) with other forms of presentation (irritability, vomiting, diarrhoea, loss of appetite, headache, tinnitus, vertigo, hearing loss, neck stiffness) with 14.7%. 93 of the patients presented as acute otitis media (72.1%), 30 of the patients with chronic suppurative otitis media (23.3%) and 6 of them with otitis media with effusion (4.7%) A lot of the patients were managed medically (95.3%), just 3.1% were managed conservatively and 1.6% had surgical intervention

CONCLUSION: Otitis media should be managed more aggressively with potent antibiotics to prevent development of complications or progression from acute to chronic forms.

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I. Introduction

Otitis media is a common illness among children characterized by inflammation of the middle ear involving other areas of the temporal bone contiguous to the middle ear, including the mastoid, perilymph air cells, and the petrous apex⁽¹⁾. It is a common reason for young children to visit primary health care provider, and responsible for a significant morbidity and mortality before the advent of antibiotics.⁽¹⁾

It is classified into Acute otitis media, Otitis media with effusion, Chronic suppurative otitis media and adhesive otitis⁽²⁾

Under normal conditions, the mucociliary action and ventilator function of the Eustachian tube clear the nasopharyngeal flora that enters the middle ear. However, upper respiratory viruses can infect the middle ear and can impair this process, which may then contribute to the development of acute otitis media (AOM). A virus can cause an inflammation of the nasal passages and Eustachian tube, which disrupts the normal mucociliary clearance and ventilation of the middle ear. A middle ear effusion develops, and nasopharyngeal bacteria contaminate the effusion. The middle ear effusion provides a good media for bacterial growth, which then initiates a suppurative, inflammatory response. Suppuration and subsequent pressure against the tympanic membrane lead to pain and fever, which are typical symptoms of AOM. In more severe cases, the tympanic membrane may perforate and cause a purulent otorrhoea.⁽³⁾

Acute otitis media continues to be an important public health problem around the world. A large number of studies have established that, where organisms have been isolated from the middle ear, two organisms, streptococcus pneumoniae and Haemophilus influenza are the principal etiological agents in bacterial infection, occasional Moraxella catarrhalis can be isolated^(4,5) Unfortunately the most common pathogen, Streptococcus pneumonia has been implicated with serious antibiotic resistance. Viral causes include respiratory syncytial virus, influenza virus, para influenza and rhinovirus. All the organisms in the colony have high potential for resistance after first exposure, this coupled with the fact that the selection of antibiotics treatment is usually empirical because of the difficulty in obtaining culture specimen makes the treatment of otitis media very difficult⁽⁶⁾

Management of otitis media involves use of oral and topical pain killers which are effective to treat the pain caused by otitis media. Oral agents include ibuprofen, paracetamol (acetaminophen), and opiates. Topical agents shown to be effective include antipyrine and benzocaine ear drops.⁽⁷⁾ Decongestants and antihistamines, either nasal or oral, are not recommended due to the lack of benefit and concerns regarding side effects.⁽⁸⁾ Half of cases of ear pain in children go away without treatment in three days and 90% go away in seven or eight days.⁽⁹⁾ It is important to weigh the benefits and harms before using antibiotics for acute otitis media. As over 80% of acute episodes settle without treatment, about 20 children must be treated to prevent one case of ear pain, 33 children to prevent one perforation, and 11 children to prevent one opposite side ear infection. The harms include, for every 14 children treated one child has an episode of either vomiting, diarrhea or a rash.⁽¹⁰⁾ Deferring the start of antibiotics in acute otitis media for one to three days if pain is manageable with analgesics is currently recommended.^(11, 12) The first line antibiotic treatment, if warranted, is amoxicillin.⁽¹³⁾ If there is resistance or use of amoxicillin in the last 30 days then amoxicillin-clavulanate or another penicillin derivative plus beta lactamase inhibitor is recommended.⁽¹³⁾ While less than 7 days of antibiotics have less side effects more than seven days appear to be more effective.⁽¹⁴⁾ Among short-course antibiotics, long-acting azithromycin was found more likely to be successful than short-acting alternatives.⁽¹⁵⁾ If there is no improvement after 2–3 days of treatment a change in therapy may be considered.⁽¹³⁾

Surgical treatment is being reserved for persistent middle ear effusion, which can be treated with myringotomy and intubation. Tympanic membrane perforation can be treated with tympanoplasty.

II. Material And Methods

This study was a retrospective review that was carried out on patients of department of ear nose and throat at Usmanu Danfodiyo University Teaching Hospital Sokoto. Therefore, folders of all patients who presented with otitis media between January 2011 and December 2012 were retrieved and reported. One hundred and twenty nine (129) cases of childhood otitis media patients were identified and reviewed. 65(50.4%) were males and 64 (49.6%) were females with age distribution ranging from one (1) month to fifteen (15) years

Study Design: This was a retrospective study

Study Location: This was a tertiary care teaching hospital based study done in Department of ear nose and throat, at Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria.

Study Duration: January 2011 to December 2012

Sample size: 129 patients.

Sample size calculation: Not applicable

Subjects & selection method: The study population comprised of all patients who presented to the ENT clinic of Usmanu Danfodiyo University Teaching Hospital, Sokoto from January 2011 to December.

Inclusion criteria: All children diagnosed with otitis media during the study period of the study.

Exclusion criteria: The data that was collected for this research is secondary data since it was obtained from patient's folder. Secondary data is less qualitative than primary data. Adequacy of the information obtained was less.

Procedure methodology

Approval was obtained from the ethical committee of Usmanu Danfodiyo University Teaching Hospital, Sokoto to carry out this study, a well-designed questionnaire was used to collect the data from secondary source; folders of patient who had suffered from otitis media and was seen in the outpatient ENT clinic of UDUTH.

The questionnaire included socio-demographic characteristics such as age, gender, tribe, residential area and duration of admission. Section two include clinical presentation and diagnosis while section three captures data on type of treatment and complication.

Statistical analysis

Data was analyzed using SPSS version 20.

III. Result

Out of the total 5052 cases that were seen in ENT clinic of UDUTH during the study period, about 238 were cases of otitis media, out of which the majority were children (54%). A total of one hundred and twenty nine (129) cases of childhood otitis media patients were identified and reviewed. 65(50.4%) were males and 64 (49.6%) were females (table 1) with age distribution ranging from one (1) month to fifteen (15) years.

Age specific distribution is shown in table 2 and figure a. It can be seen that children between the ages of 1-5 are more prone to otitis media (48.1%)

Table 3a-e shows the pattern of presentation. The commonest mode of presentation is ear discharge (68.2%) followed by ear pain (57.4%), then nasal discharge (37.2%), fever (20.2%) with other forms of presentation (irritability, vomiting, diarrhoea, loss of appetite, headache, tinnitus, vertigo, hearing loss, neck stiffness) with 14.7%

Table 4 shows the different types of otitis media. 93 of the patients presented as acute otitis media (72.1%), 30 of the patients with chronic suppurative otitis media (23.3%) and 6 of them with otitis media with effusion (4.7%)

Figure b shows graphical representation of the types of otitis media

A lot of the patients were managed medically (95.3%), just 3.1% were managed conservatively and 1.6% had surgical intervention. These are shown in both table 5 and figure c.

Table 1: Age distribution of children with Otitis Media

Age group	Frequency	Valid percent
<1	21	16.3
1-5	62	48.1
6-10	33	25.6
11-15	13	10.1
Total	129	100.0

It can be seen that children between the ages of 1-5 are more prone to otitis media (48.1%)

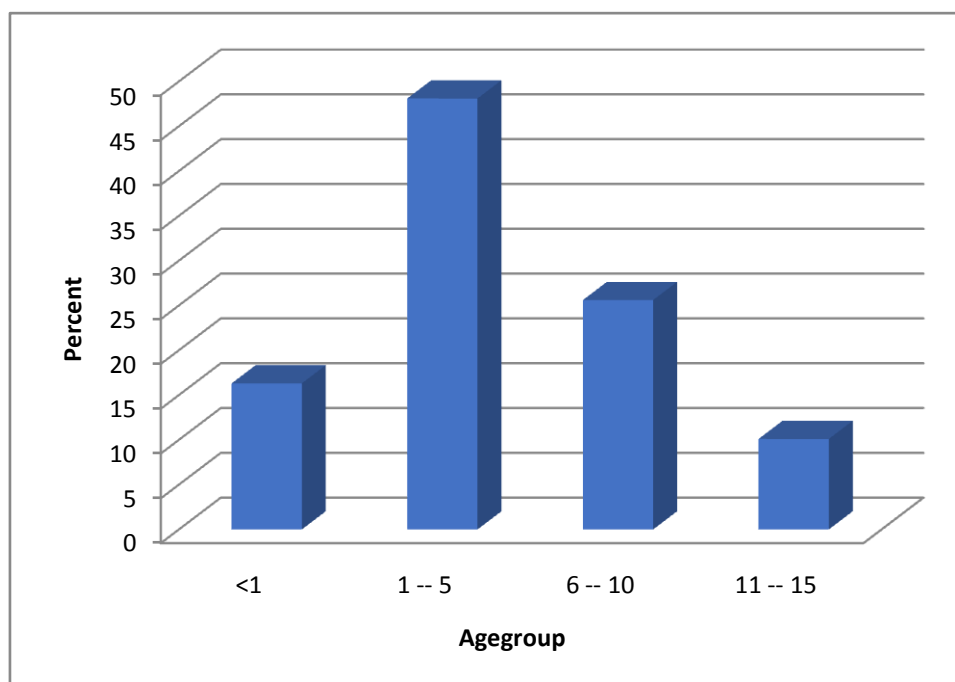


Figure a: Age distribution of children with otitis media

Table 2: Sex distribution of children with otitis media

Sex	Frequency(n)	Valid Percent (%)
Male	65	50.4
Female	64	49.6
Total	129	100.0

It can be seen that children between the ages of 1-5 are more prone to otitis media (48.1%)

Table 3a: Prevalence of fever among children with otitis media

Presence of fever	Frequency(n)	Valid Percent(%)
Yes	26	20.2
No	103	79.8
Total	129	100.0

20.2% of the children presented with fever

Table 3b: Prevalence of Ear discharge among children with Otitis Media

Presence of ear pain	Frequency(n)	Valid Percent(%)
Yes	74	57.4
No	55	42.6
Total	129	100.0

68.2% presented with ear discharge

Table 3c: Prevalence of Ear pain among children with Otitis Media

Presence of ear discharge	Frequency(n)	Valid Percent(%)
Yes	88	68.2
No	41	31.8
Total	129	100.0

57.4% presented with ear pain

Table 3d: Prevalence of Nasal discharge among children with Otitis Media

Presence of nasal discharge	Frequency(n)	Valid Percent(%)
Yes	48	37.2
No	81	62.8
Total	129	100.0

37.2% presented with nasal discharge

Table 3e: Prevalence of Other Clinical presentation among children with otitis media among children

Presence of other clinical pres.	Frequency(n)	Valid Percent(%)
Yes	19	14.7
No	110	85.3
Total	129	100.0

14.7% presented with other symptoms like irritability, vomiting, loss of appetite

Table 4: Classification of types of otitis media among children

Diagnosis/classification of O.M	Frequency(n)	Valid Percent(%)
AOM	93	72.1
OME	6.0	4.7
CSOM	30	23.3
Total	129	100.0

93 of the patients presented as acute otitis media (72.1%), 30 of the patients with chronic suppurative otitis media (23.3%) and 6 of them with otitis media with effusion (4.7%)

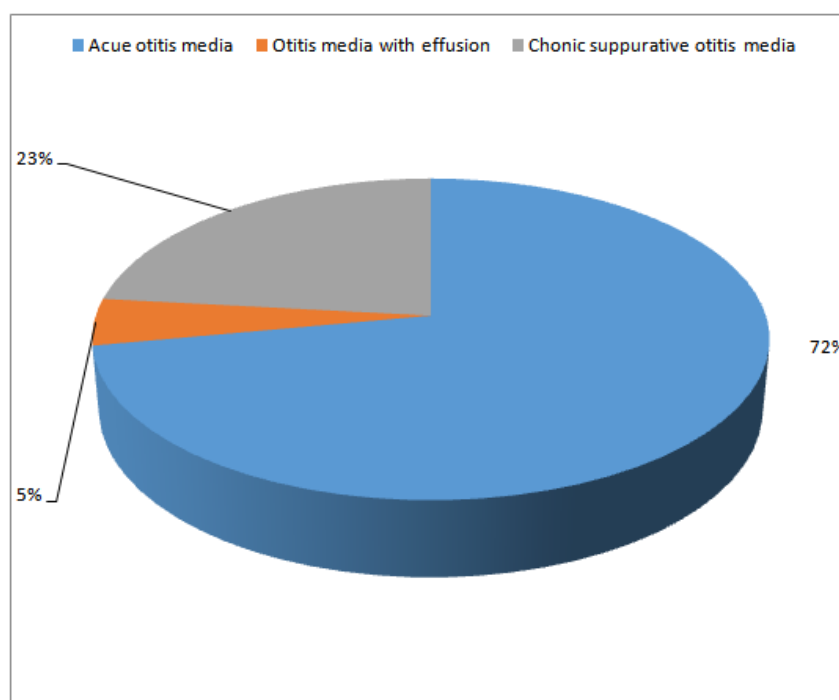


Figure b: Diagnosis/ Classification of otitis media

Table 5: Types of management of Otitis Media among children

Types of management of Otitis Media	Yes	Percentage(%)
Conservative	4	3.1
Medical	123	95.3
Surgical	2	1.6
Total	126	100

95.3% of the patients were managed medically, 3.1% conservatively and 1.6% surgically

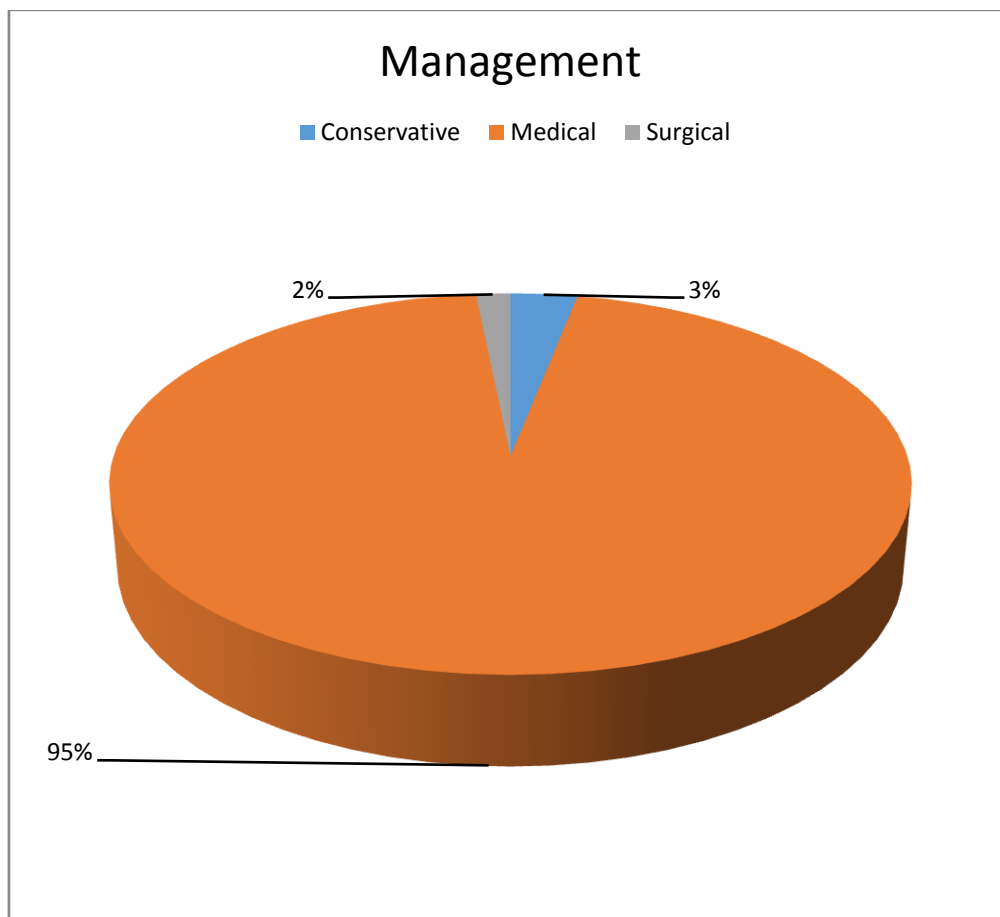


Figure c: Types of management of Otitis Media among children

IV. Discussion

The inflammation of the middle ear cleft known, as otitis media could be acute, subacute or chronic. The acute form if not recognized early is commonly characterized by suppuration from the middle ear following perforation of the tympanic membrane. It is the commonest ear pathology in otorhinolaryngological practice. It is also the commonest paediatric otorhinolaryngological presentation. Otagia followed by otorrhoea is the commonest symptoms prior to presentation in the hospital. Many predisposing factors have been reported in the literature, such as age, (commoner in younger children) cold climatic conditions, race, upper respiratory tract infection, immune deficiency states, malnutrition, tumors of the nose and nasopharynx.. In this report, 0-5 year's age group accounted for a cumulative 64.3%. This is similar to other reports.⁽¹⁵⁻¹⁷⁾ A study carried out in Okada, a rural community in Edo State of Nigeria however showed a prevalence of 78.4 %.⁽¹⁸⁾ This is probably due to difference in location (otitis media is commoner in the rural area). Children are more prone due to a number of reasons such as susceptibility to upper respiratory tract infections, more horizontal nature of Eustachian tubes, and immaturity of immune system.⁽¹⁵⁻¹⁷⁾

Otorrhoea was the commonest presenting symptom followed by nasal discharge and otalgia. The modes of presentation were similar to those in the study carried out by Iseh and Adebite.⁽¹⁹⁾ It is the ear discharge due to tympanic membrane perforation that brings patients to the hospital. Tympanic membrane perforation and suppuration may be arrested if excessive crying with touching of the ear is detected early and

confirmed by otoscopic examination. This usually reveals hyperaemic tympanic membrane. Prompt antibiotic and nasal decongestant treatment will abort suppuration.

Staphylococcus aureus was the commonest micro-organism cultured in Nigeria.^(15, 17) This is a beta-lactamase producing bacteria. The implication is that treatment with antibiotics that are active against beta-lactamase producing bacteria will be more effective in preventing progression from ASOM to the chronic chronic suppurative otitis media (CSOM). However, Brobby in Ghana cultured *streptococcus pyogenes* in patients who had suppuration within 7 days.⁽²⁰⁾ Subsequent discharges were secondarily contaminated and cultured other micro-organisms and it was suggested that penicillin was still effective. However, quite a large number still progressed to the chronic stage as penicillin was ineffective.

None of the patients in this study had any complications. This may be due to widespread antibiotic self-medication in Nigeria before seeking treatment in hospital.

Failure of resolution of acute suppurative otitis media with persistent ear discharge will lead to a chronically discharging ear, chronic suppurative otitis media (CSOM).⁽²¹⁾ It is suggested therefore that antibiotics active against beta- lactamase producing bacteria other than penicillin may offer a better option in treating ASOM in Nigeria. This may be the reason amongst others for progression to chronic suppurative otitis media when only penicillin are used. Augmentin (Amoxicillin + Clavulanate potassium) an antibiotic active against beta-lactamase producing bacteria, though more expensive, was used in most of our patients. Daily aural toileting was carried out until there was no more discharge.

V. Conclusion And Recommendations

Specific prevention strategies applicable to all infants and children such as immunization against viral respiratory infections or specifically against organism that cause otitis media are not currently available. A child that is prone to otitis media should avoid contact with sick playmates and in environment with tobacco smoke. Infants who are fed while lying down also appear to develop otitis media more frequently. Children who have been breast-fed often have fewer episodes of otitis media. Research has shown that cold and allergy medications such as antihistamines and decongestants are not helpful preventing ear infections. The best hope for avoiding ear infections development of vaccine that against the bacteria that often cause otitis media. Scientists are currently developing vaccines that show promise in preventing otitis media. Additional clinical research must be completed to ensure their effectiveness and safety. People should embark on the use of antibiotics in the management of otitis media only on prescription by clinicians, who should also prescribe these drugs, only after antibiotic sensitivity test have been carried out.

Further trials with other antibiotics active against beta lactamase producing bacteria are necessary to compare results in terms of cost effectiveness in the treatment of ASOM in developing countries like Nigeria. This will reduce the rate of progression to CSOM which is a more complex condition to manage.

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