

Original Article

Pattern of Chronic Suppurative Otitis Media at the National Ear Care Centre Kaduna, Nigeria

Aminu A. Bakari, Adeyi A. Adoga*, Olushola. A. Afolabi, Aliyu M. Kodiya, Babagana M. Ahmad
National Ear Care Center, No. 3 Golf/Independence Way, PMB 2438, Kaduna, Nigeria

Abstract

Background: Chronic suppurative otitis media constitutes a major cause of otorhinolaryngological clinic visits in Nigeria, therefore it is pertinent to determine the local pattern of presentation in order to achieve adequate treatment, avoid complications and provide records for future references.

Methodology: A retrospective review of patients presenting with chronic suppurative otitis media to the out-patient clinic of the National Ear Care Center, Kaduna within a period of 1 year

Results: One hundred and forty six patients presented, accounting for 3.8% of the total number of patients and 6.6% of all otological cases. One hundred and twenty eight (87.7%) case notes were retrievable and studied. Patients were aged 1 year to 82 years (mean=19.2 years) with 67 males and 61 females giving a gender ratio of 1.1:1. Children under 10 years constituted the majority (n=64). Tympanic membrane perforation was central in 117 (67.6%), marginal in 38 (22%) and attic in 18 (10.4%) patients. Positive culture occurred in 75 (58.6%), no growth in 22 (17.2%) patients and there was no record of ear swab or culture in 31 (24.2%) patients. Bacterial isolates were *Klebsiella* specie (n=31, 41.3%), *Escherichia coli* (n=22, 29.3%), *Streptococcus* specie (n= 8, 10.8%), *Staphylococcus aureus* (n=7, 9.3%), *Pseudomonas aeruginosa* (n=6, 8%) and *Proteus* specie (n=1, 1.3%). Antimicrobial sensitivity was highest to the quinolones (57.9%). Ninety-four (73.4%) patients achieved dry ears in the first month. The complication rate was 6.3%.

Key Words

Chronic Suppurative
Otitis Media;
Tympanic membrane;
Antibiotics.

Conclusion: We recommend the quinolone antibiotics as first line drugs in treatment of chronic suppurative otitis media and continuing medical education of general practitioners and pediatricians especially those practicing in the rural areas on the management of CSOM is important to improve the outcome.

Introduction

Chronic suppurative otitis media (CSOM) is a persistent disease occurring as a complication of an untreated or inadequately treated acute otitis media. It is a disease occurring worldwide having significant health and socioeconomic implications.

In Nigeria, a developing nation, CSOM constitutes the commonest presentation in the otorhinolaryngology clinics [1, 2] and this is because it is strongly associated with low socio-economic status [3]. Fifty percent of the patients seen are aged less than 10 years [4, 5] and a bimodal age distribution has been reported from Lagos [6].

It is a persistent disease causing lethal complications like mastoid abscesses, facial nerve paralysis,

lateral sinus thrombosis, meningitis and intracranial abscesses [7].

There are two clinico-pathological types of CSOM; one is safe (tubotympanic disease) and the other is unsafe (attico-antral disease). In our environment, tubotympanic disease is the commonest [8].

Predominant microbial isolates are gram-negative bacteria such as *Pseudomonas*, *Proteus* and *Klebsiella* Species with *Escherichia coli*, Coliforms and *Staphylococcus* specie isolated in some cases [9, 10, 11]. The diagnosis of this disease is based on otoscopy, supplemented by culture of the ear discharge and radiology of the temporal bone.

Untrained and unskilled practitioners especially in the rural areas are still attending to most patients in Nigeria [12]. Even in the urban areas, many patients still present to the patent medicine stores, use at least an antibiotic eardrop before presenting to our hospital. This study aims to determine the pattern of

*Corresponding author: P. O. Box 8467 Anglo-Jos Post Office, Jos, Plateau State, Nigeria. Email: adeyiadoga@gmail.com

presentation of this disease as seen in the National Ear Care Center, Kaduna, Nigeria, comparing with that in other centers of the world and to provide records in our center for future references.

Methodology

A retrospective chart review of 128 patients presenting with chronic suppurative otitis media to the out-patient clinic of the National Ear Care Center, Kaduna, Nigeria between May 2008 and April 2009.

Approval for this study was obtained from the Ethical Clearance committee of the National Ear Care Center.

The medical records of these patients were analyzed for age, gender, occupation, site of discharge, microscopy, culture and sensitivity patterns, complications and the findings on radiology of the mastoid using the EPI-INFO database and statistics software for public health professionals, version 3.3.2.

Results

A total of 3,838 patients with various otorhinolaryngological conditions were attended to in the study period of which 2,196 (57.2%) patients had otologic presentations. One hundred and forty six patients presented with CSOM, accounting for 3.8% of the total number of patients and 6.6% of all otological cases in the study period. One hundred and twenty eight case notes were retrievable and studied.

Patients were aged 1 year to 82 years (mean age = 19.2 years) with 67 males and 61 females giving a gender ratio of 1.1:1.

Children under the age of 10 years (Table 1) constituted the majority (n=64). The following

Table 1: Age and sex distribution of Patients with CSOM.

Age (Years)	Frequency		Total	Percentage
	Male	Female		
1-10	34	30	64	50
11-20	12	6	18	14
21-30	5	8	13	10.1
31-40	8	9	17	13.3
41-50	4	3	7	5.5
51-60	3	2	5	3.9
61-70	1	1	2	1.6
71-80	0	1	1	0.8
81-90	0	1	1	0.8
Total	67	61	128	100

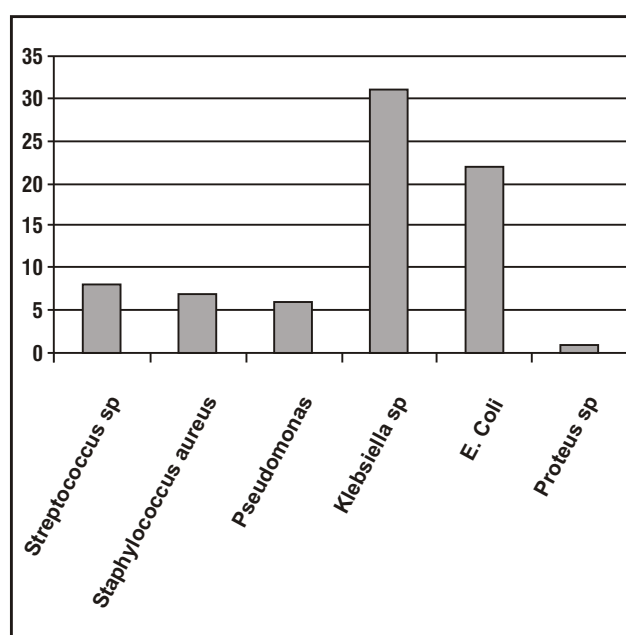
categories of individuals also presented: farmers (n=6), students (n=28), traders (n=7), unemployed (n=11), public servants (n=12).

Forty-eight (37.5%) patients had bilateral ear discharge while 80 (62.5%) had unilateral discharge with the discharge in the right ear in 42 (32.8%) and the left in 38 (29.7%) patients.

Micro-otoscopy revealed central tympanic membrane perforation in 117 (67.6%) patients. The perforation was marginal in 38 (22%) and attic in 18 (10.4%) patients.

Seventy five (58.6%) patients had positive culture, 22 (17.2%) patients had no growth and there was no record of ear swab or culture in 31 (24.2%) patients. Gram-negative bacteria comprised 80% of the isolates. The commonest bacterial isolate (Figure 1) was *Klebsiella* specie (n=31, 41.3%).

Fig 1: Bacterial isolates



Other bacteria isolated were *Escherichia coli* (n=22, 29.3%), *Streptococcus* specie (n= 8, 10.8%), *Staphylococcus aureus* (n=7, 9.3%), *Pseudomonas aeruginosa* (n=6, 8%) and *Proteus* specie (n=1, 1.3%).

The antimicrobial sensitivity (Table 2) was highest to the quinolone antibiotics (57.9%).

Plain X-rays of the mastoid in 89 (69.5%) patients showed normal mastoids in 46 (51.7%), hypopneumatized mastoids in 18 (20.2%), mastoid sclerosis in 21 (23.6%) and coalescent mastoiditis in 4 (4.5%) patients.

Table 2: In-vitro antibiotic sensitivity patterns

Isolates	Ofi	Cip	Perf.	Aug	Contr.	Gent	Cef	Chl	Ery
Klebsiella sp	82	66	68	21	0	10	56	20	0
E.coli	75	62	61	0	0	33	60	0	2
Streptococcus sp	86	65	52	31	0	51	66	9	20
Staph.aureus	67	40	32	45	6	58	58	28	8
Pseudomonas	62	52	41	56	0	18	35	0	0
Proteus sp	71	70	40	41	2	20	70	0	0

Ofi: Ofloxacin; Cip: Ciprofloxacin; Perf: Perfloxacin;
 Aug: Augmentin; Cotr: Cotrimoxazole; Gent: Gentamicin;
 Cef: Cefuroxime; Chl: Chloramphenicol; Ery: Erythromycin

Ninety-four (73.4%) patients achieved dry ears in the first month of hospital visit following aural toileting, wick ear dressings with antibiotic eardrops and systemic decongestants.

There were a total of 8 complications in this study giving a complication rate of 6.3%. The complications included post auricular sinus (n=5), post auricular abscess (n=2) and facial nerve paralysis (n=1).

Discussion

Chronic suppurative otitis media has continued to remain the commonest otorhinolaryngological disease seen in the outpatient departments of hospitals in Nigeria by otorhinolaryngologists, pediatricians and general practitioners. Although the use of antibiotics has reduced of complications of chronic suppurative otitis media [13], it is still a major cause of morbidity in our environment with poverty being the major influencing factor.

In our center, the prevalence rate of 3.8% is still lower than findings from other centers 3, 12, 14].

Unlike other studies [5, 15], our study has shown a close gender ratio and this could be as a result of increasing female enlightenment in our society as more women now present to the hospital once they are ill.

Chronic suppurative otitis media is a disease that predominantly affects children, especially those under 10 years of age and this fact remains the same in our study in which 64% of the patients presenting with CSOM were between 1 to 10 years (Table 1). This is due to a combination of microbial, immunological, genetically determined factors and Eustachian tube characteristics in children.

Most of our patients, 67.6% had central tympanic membrane perforation (tubotympanic disease). Marginal perforation occurred in 22% and attic

perforation in 10.4% of patients. This finding conforms to those of Okafor, Ologe and Nwawolo [8, 12] in which tubotympanic disease is the commonest clinicopathological mode of presentation in our environment.

Ear swabs taken for culture revealed no growth in 22.7% of our patients. It is common practice by individuals with discharging ears in our environment to visit a patent medicine store, purchase and use an antibiotic eardrop or a systemic antibiotic before presenting to the hospital. This factor could be responsible for the negative cultures obtained in these individuals on the one hand. On the other, obligate anaerobic bacteria could be responsible for these discharges and without facilities for anaerobic culture as it is in our center; these results will be negative. There is therefore the need for the provision of anaerobic culture.

This study shows a change in the pattern of isolates from discharging ears. The commonest bacterial isolate in our study is Klebsiella specie, followed by Escherichia coli (Figure 2). This finding is different from that of other previous microbiological studies on ear discharges both in and outside Nigeria [9, 10, 11, 15]. This could be a pointer to bacterial genome evolution with the development of bacteria that are more virulent or an environmental difference in prevalent organisms responsible for CSOM. Further studies are required to make this allusion.

The antibacterial sensitivity in our study was 59.6% for the quinolone antibiotics- highest for ofloxacin (70.5%), 57.5% for cefuroxime and 32.3% for augmentin (Table 2).

Four patients had mastoid exploration in this study. The complication rate of 6.3% seen in our study conforms to the findings in other studies in Nigeria [8, 15].

The importance of aural toileting in the clinics using cotton swabs before instilling antibiotic eardrops is hereby emphasized especially to the general practitioners, pediatricians and practitioners in the rural areas who may see the patients first in their health facilities. Aural wick dressings with topical antibiotic eardrops in children and adults can be achieved. The advantage of this is two-pronged; the antibiotic eardrop is in direct contact with the bacteria while the wick soaks up the purulent ear discharge. Systemic or local decongestants reduce secretions blocking the pharyngeal opening of the Eustachian tubes thereby

improving aeration of the middle ear with the majority of patients achieving dry ears within the first month of hospital visit as seen in our study.

CSOM is a major cause of otologic clinic attendance in our centre.

The quinolone antibiotics are recommended as first line drugs for treatment.

Health education should be embarked upon to discourage individuals from self-medication with antibiotic eardrops and systemic antibiotics.

Finally, continuing medical education of general practitioners and pediatricians on the management of CSOM is important to improve the outcome.

Acknowledgment

We are grateful to all the staff of the Records and Microbiology departments of the National Ear Care Centre, Kaduna.

References

1. Bhattia PL, Varursheje R. Patterns of otorhinolaryngology diseases in Jos community. *Nig Med J*. 1987; 2: 68-73.
2. Ogisi FO, Osammor JY. Bacteriology of chronic suppurative otitis media in Benin. *Nig Med J*. 1982; 12: 181-190.
3. Lasisi AO, Suleiman OA, Afolabi OA. Socioeconomic status and hearing loss in chronic suppurative otitis media in Nigeria. *Ann Trop Paediatr*. 2007; 27(4): 291-6.
4. Okafor BC. Otorhinolaryngology in the southeastern Nigeria: pattern of disease of the ear. *Nig Med J*. 1983; 13: 11-19.
5. Tanfati OA, Ahmed BM. Bacteriology of chronic suppurative otitis media in Maiduguri, northeastern Nigeria. *J Life Environment Sci*. 2000-2001; 2/3: 133-134.
6. Rotimi VO, Olabiyi DA, Banjo T et al. Randomized comparative efficacy of clindamycin, metronidazole and lincomycin plus gentamicin in chronic suppurative otitis media. *West Afr J Med*. 1990; 9: 89-97.
7. Berman S. Otitis media in developing countries. *Pediatrics*. 1995; 96(1pt1): 126-31.
8. Okafor BC. The chronic discharging ear in Nigeria. *J Laryngol Otol*. 1984; 98(2): 113-9.
9. Oni AA, Bakare RA, Nwaorgu OG et al. Bacterial agents of discharging ears and antimicrobial sensitivity patterns in children in Ibadan, Nigeria. *West Afr J Med*. 2001; 20(2): 131-5.
10. Aslam MA, Ahmed Z, Azim R. Microbiology and drug sensitivity patterns of chronic suppurative otitis media. *J Coll Physicians Surg Pak*. 2004; 14(8): 459-61.
11. Wariso BA, Ibe SN. Bacteriology of chronic discharging ears in Port-Harcourt, Nigeria. *West Afr J Med*. 2006; 25(3): 219-22.
12. Akinpelu SA, Amusa YB, Komolafe EO et al. Challenges in management of chronic suppurative otitis media in a developing country. *J Laryngol Otol*. 2008; 122(1): 16-20.
13. Wusternberg EG, Knothe J, Kittner T et al. Endocranial complications in otitis media: what you need to remember. *MMW Fortschr Med*. 2005; 147(12): 52; 54-5.
14. Verma AK, Vohra A, Maitra A et al. Epidemiology of chronic suppurative otitis media and deafness in a rural area and developing an intervention strategy. *Indian J Pediatr*. 1995; 62(6): 725-729.
15. Ahmad BM, Kudi MT. Chronic suppurative otitis media in Gombe, Nigeria. *Nig J Surg Res*. 2003; 15(3-4): 120-3.