Role of Bacteria in chronic Suppurative Otitis Media and Sensitivity pattern in Baqubah Teaching Hospital

Nasser Khalil Muhammed (ORL&HNS)[1]and **Hayder Jasim Hamood** (FIBMS)[2]

Abstract

Background: Otitis media is an inflamation of middle ear, it is either acute or chronic,chronic may be otitis media with effusion(intact tympanic membrane) or may be chronic suppuratve otitis media(there is a perforation in the eardrum)which is aninflamation of middle ear mucosa and mastoid air cells for a period more than 3 months. This inflamation is either a sequely of acute suppurative otitis media (tubotympanic disease)or may be due to a cholesteatoma(atticoantral disease).

Objective: To determine type of bacteria that most commonly cause this inflammation and the sensitivity pattern of this bacteria to antibiotics.

Patients and Methods: We took 197 patients that we diagnose them clinicaly as cases of chronic suppurative otitis media (with central perforation in the tympanic membrane)(which mean tubotympanic type)and we stopped antibiotic treatment for 3 days(if the patient on this treatment) then we collect samples of pus from the affected ear and then we sent these samples to the lab for bacteriologic study to evaluate the results.

Results:*Pseudomonas aeruginosa* was the most common microorganism involved in our cases of chronic suppurative otitis media followed by *Staphylococcusaureus*sensetivity pattern of *Pseudomonas aeruginosa* showed thatciprofloxacillin was active against (95%) of isolates followed by amikacin (85%) followed by gentamycin (81%), ceftazidime (80%)and ceftriaxone (50%)

Conclusion: The present study reveals that *Pseudomonas aeruginosa*was the most common pathogen followed by *staphylococcus aureus*isolated from chronic suppurative otitis media. Ciprofloxacilline was found to be the most suitable antibiotic followed by amikacin and ciftazidime for *Pseudomonas aeruginosa.* The resistance against Ceftriaxone was found to be high.

Key worlds: Chronic suppurative otitis media, *pseudomonas aeruginosa*, *staphylococcus*, antimicrobial, ciprofluxacilline, otorrhoea.

Corresponding Author:dr_naseer_ent@yahoo.com

Received: 22thMarch 2016
Accepted:15th May 2016

[1]Department of Otolaryngology - Baqubah Teaching Hospital - Diala-lraq
[2]Department of Medicine- Baqubah Teaching Hospital - Diala-lraq

Introduction

Chronic suppurative otitis media is chronic inflamation of the middle ear and mastoid air cells [1]. Chronic suppurative otitis media is one of the common diseases in daily otolaryngolology experience [2]. It may be acute or chronic. The acute form usually associated with the infection in the upper aerodigestive tract [3]. Whereas persistent form known as chronic suppurative otitis media. Chronic form is still an important problem in developing countries [4]. It is more common in kids belonging to lower socioeconomic group. Its seriousness is from

its complications [5]. This was studied by Shyamala who found that ignored cases move to the complications easily like mastoiditis and facial palsy [6].

Recurrent otitis media may cause destruction of small bones of the middle ear, seventh cranial nerve or inner ear resulting in permanent deafness [7]. Complications occur more in atticoantral type than tubotympanic [8] But in fact and in such a century that antibiotics is so evolved, complications has decreased in its occurrence [9].

Most common microorganisms found in chronic suppurative otitis media are *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Proteus mirabilis*, *Klebsiellapneumoniae* and *Escherichia coli* [10].

Prayaga reach to a similar idea in his study and found that pseudomonas forms about 54% of the results of the cultures of his samples in the study [11]. On the other hand, Shamweel found that Staphylococcus aureus forms about 45% in comparison to the 19% of the pseudomonas in his samples [12].

Antimicrobial treatment is used to eliminate the bacterial agents causing otitis media but most of the bacterial agents develop resistance [13]. Resistance style of the bacteria is continously be altered [14]. In developing countries this regards as a dilemma due to misuse of the antibiotics [15].

So this study aims to identify type of bacteria that responsible for chronic suppurative otitis media and their sensitivity to antibiotics.

Materials and Methods

This study was carried out at the outpatient department of Baqubah teaching hospital since 3rd of December 2011 to 9th of December 2012.

A total of 197 patients with unilateral or bilateral chronic suppurative otitis media were enrolled. Age range from 1 year to 75 years old, 110 was females and 87 was males.

Diagnosis was made clinically. Detail clinical history regarding age, duration of otorhoea and any antibiotic treatment received. Clinical examinations were done differentiate acute otitis media and otitis externa. Sterile cotton swabs were used to collect pus from discharging ears. Ear discharges of more than 3 months duration were included in our samples. Discharge of less than 3months duration, discharge with intact tympanic membrane (otitis externa) and patient receiving antibiotics at time of presentation were excluded.

Overall microbiology of 201 samples was studied during 12 months. The swabs were plated on MacConkey agar, blood agar and chocolate agar and incubated for 24-48 hours at 37C. Isolated strains of bacteria were tested for susceptibilty to antibiotics by Kirby Bauer method. The antibiotics tested were ciprofloxacilline, amikacin, ceftazidime, gentamicine and ceftriaxone.

Statistical analysis

The data was performed using the Statistical Package for the Social Sciences (SPSS), version 18. All variables were expressed as frequencies and percentages.

Results

A total of 197 patients were included in the study among them 4 had bilateral discharge. All 201 samples showed single while multiple microorganism growth was present in 11 samples.

Children and young adults were more affected and together comprise about 132 patients (67%) of total cases. Females (110 patients) (55.8%) were more commonly affected than males (87patients) (44.2%).

Table (1): Number and percentage of both sexes that affected in CSOM in studied group.

Gender	No.	%
Male	87	44.2%
Female	110	55.8%

Pseudomonas aeruginosa was the most common bacterial agent found in chronic discharging ear (60%) followed by *staphylococcus aureus* (25%) and by *proteus* (7%), *klebsiella* (5%) then *E coli* (3%).

Table (2): Number and percentage of each bacterium that result in culture and sensitivity tests in studied samples.

Bacteria	No.	%
Pseudomonas	123	60%
Staph. Aureus	52	25%
Proteus	14	7%
Klebsiella	10	5%
E coli	6	3%

Sensetivity pattern of *Pseudomonas aeruginosa* showed that ciprofloxacillin was active against (95%) of isolates followed by amikacin (85%) followed by gentamycin (81%), ceftazidime (80%) and ceftriaxone (50%)

Discussion

Chronic suppurative otitis media and various complications associated with the disease are among the most common conditions seen by ENT surgeons. It is a persistent disease and often causes local destruction of middle ear structure's that is irreversible. We took 197 patients, aged 1-75 years old, 110 of them are female and 87 are males.

In this study chronic suppurative otitis media was found mostly among children and young age groups.Bijan was found same results and he noticed that 40% of his patients were between11 and 30 years old [16]

Females were more commonly attacked than males.Our results show that chronic suppurative otitis media in Baquba is mainly due to *Pseudomonasaeruginosa* followed by *staphylococcus aureus*. However, *Proteus mirabilis, Klebsiella and E coli* also found. Antibiotics resistant map was done against 5 antibiotics (Amikacin, Ciprofloxacilline, Ceftazidime, ceftriaxone and Gentamicine) Flouroquinolones have a broad range of activity and it is found to be active against *pseudomonasaeruginosa.*

This result is comparable with other studies in Iraq that show *pseudomonas* is the most common bacteria in chronic ear discharge [17].Also its comparable with studies abroad like that was done by Mansoor in Karachi [18].

In conclusion, *Pseudomonas aeruginosa*was the most common pathogen followed by *staphylococcus aureus*isolated from chronic suppurative otitis media. Ciprofloxacilline was found to be the most suitable antibiotic followed by amikacin and ciftazidime for *Pseudomonas aeruginosa.*

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