

STUDY OF CHRONIC SUPPURATIVE OTTIS MEDIA PATIENTS ATTENDING TERTIARY CARE HOSPITAL

B. Nagajyothi¹, B. Shantireddy², P. Venkateswarlu³

HOW TO CITE THIS ARTICLE:

B. Nagajyothi, B. Shantireddy, P. Venkateswarlu. "Study of Chronic Suppurative Otitis Media Patients Attending Tertiary Care Hospital". *Journal of Evolution of Medical and Dental Sciences* 2015; Vol. 4, Issue 04, January 12; Page: 662-666, DOI: 10.14260/jemds/2015/97

ABSTRACT: The present study was conducted to find out the common bacterial flora of both aerobic and anaerobic which are prevalent in chronic suppurative otitis media and to know the antibiotic susceptibility of organisms in CSOM. The study period was from January to December – 2006 in Dept of Microbiology, Kurnool Medical college, Kurnool. A total of 200 ear swabs were bacteriologically investigated both in aerobic and anaerobic cultures. Out of 200 swabs, 180 comprised study group, 20 comprised of control group. Highest incidence of CSOM is observed in age group below 10 years. Prevalence is more in males than females. Incidence of various species of aerobic organisms in the order of preference- Staphylococcus (45%), Pseudomonas (25%), Proteus (15%), Klebsiella (7%), E.coli (4%), miscellaneous(4%). Incidence of anaerobic organisms are in the order of preference as Bacteriodes and Peptococci.

KEYWORDS: CSOM, ear swabs, gram staining, culture, antibiotic susceptibility.

INTRODUCTION: Chronic suppurative otitis media with its innumerable complications is one of the common diseases among the practice of the otologist, pediatrician and the general practitioner.

Hearing is not only a medium for communication but also a protective sensation for individuals to be alert in situations of threatening danger. CSOM was found to be the single major cause for the conductive deafness. The incidence is so high that about 30% of the patients that attend E.N.T Out Patient Department suffer from CSOM about 2.5% of the general population and 3 to 4 percent of children suffer from discharging ears. The understanding of the pathology and bacteriology of otitis media assumes a practical significance in the prevention of the disease or minimise the complications.⁽¹⁾

Chronic suppurative otitis media is an insidious and potentially dangerous disease. It is known for its chronicity and difficulty to achieve dry ear. It is a disease of multiple and overlapping etiology.⁽²⁾ The wide range of microbes both aerobic and anaerobic present in CSOM has been the subject of exhaustive investigation. The metabolism of facultative species in mixed infection, by lowering the local concentration of oxygen and reduction potential, provides a suitable environment for anaerobic pathogens.^(3,4) Non-sporing anaerobes were invariably isolated together with aerobic organisms; however, in a few patients mainly anaerobes were isolated.⁽⁵⁾

The evidence of the involvement of anaerobic pathogens in CSOM was previously indirect. Cases with fetid discharge and sterile on routine aerobic culture can be considered as due to anaerobic organisms. Methods for identification of anaerobes have been refined in recent years and the use of newer improved simplified techniques give a clear picture of bacterial flora in CSOM.^(6,7)

It is becoming increasingly evident that many cases pose a difficult problem to the clinician with recurrence and progressive non-responsiveness for treatment. Many a time reliance is placed on random antibiotic therapy, prior to a defined laboratory diagnosis of this condition leading to

ORIGINAL ARTICLE

indiscriminate use of antibiotics. This resulted in the emergence of bacterial resistance towards established therapeutic agents.^(8,9)

The present study was undertaken to know both the aerobic and anaerobic bacterial flora in chronic suppurative otitis media and their susceptibility to antibiotics.

MATERIAL AND METHODS: A Total no of 200 ear swabs were collected from patients with clinical diagnosis of CSOM attending E.N.T. outpatient department of Government General hospital, Kurnool from January to December - 2006. All these were new patients who did not have recent treatment with antibiotics either locally or systemically. The cases included individuals of both sexes and of all age groups.

The ear discharge in adults were collected under aseptic conditions with sterile swabs by dipping into deep meatus through which it drains. In normal individuals for control study, swabs were collected from deep part of external auditory canal. All possible precautions were taken to avoid contamination while collecting the swabs.

The first swab dipped immediately in Hartley's broth was utilised for aerobic culture of the organism. The second swab was dipped immediately without much exposure to atmospheric air in the thioglycolate medium in a test tube and cotton plug is kept tightly. The 3rd swab was kept in a sterile bottle for smear preparation. All the samples were transported to the laboratory immediately.⁽¹⁰⁾

The pus on the 3rd swab was used for making smear for microscopic examination (Gram Staining). The 1st swab dipped in Hartley's broth was incubated at 37°C for 6 hrs and sub cultured on Nutrient agar, MacConkey agar, Blood agar plates. The inoculated media was incubated at 37 °C aerobically for 24hrs. The organisms isolated were identified on the basis of morphology, cultural characters and biochemical reactions according to the standard techniques. Gram positive cocci were sub cultured into Hartley's broth and Gram negative bacilli were inoculated into peptone water for further study.⁽¹¹⁾

The gram positive cocci were identified and classified as *Staphylococcus aureus*, *albus* by their colony characters, pigment production, tube coagulase test and mannitol fermentation, haemolysis and gelatine liquefaction. Micrococci were identified by morphology, colony characters and oxidase test. All gram negative bacilli were identified by their colony characters, smear examination, motility, oxidase test, reaction on TSI agar, urease test, nitrate test.

The second swab in thioglycollate broth was incubated at 37° C for 48 hours sub cultured on Neomycin blood agar (With Metronidazole disc) immediately incubated in anaerobic jar with gas pack. The organisms isolated were identified by their colony characters, smear examination. gram negative rods identified were *Bacteroides* species, gram positive cocci arranged in clusters identified as peptococci.

RESULTS: A total no. of 200 ear swabs of outpatients were collected and bacteriologically processed. Out of 180 ear swabs 172 yielded positive cultures and 8 showed no growth. Of the 172 positive cultures 120 yielded aerobic growth and 12 yielded anaerobic growth and 40 showed mixed growth. In control group 16 were positive with aerobic growth.

ORIGINAL ARTICLE

Group	Total	Positive	Aerobic	Anaerobic	Mixed
Study group	180	172	120	12	40
Control group	20	6	6	0	0
Total	200	178	126	12	40

Table 1: Incidence of Isolated Organisms

Group	Aerobic	Anaerobic	Mixed
Study group	120 (65%)	12 (6%)	40(29%)
control group	6	0	0

Table 2: Incidence of aerobic, anaerobic and mixed cultures

ORGANISMS	PERCENTAGE
Staphylococcus sps	45%
Pseudomonas sps	25%
Proteus sps	15%
Klebsiellasps	7%
E. coli	4%
Miscellaneous	4%

Table 3: Incidence of aerobic organisms in CSOM

Incidence of anaerobic organisms was 13 out of which 8 were Bacteroides sps, and 5 were Peptococci.

Present study in age wise shows highest incidence in children below 10 years (75%) above 10 years 25%. Prevalence is more in males (68%) than in females.

Drug	Sensitivity	Resistance
Ampicillin	20%	80%
Erythromycin	24%	76%
Cephalexin	30%	70%
Gentamycin	70%	30%
Ciprofloxacin	80%	20%
Amikacin	84%	6%
Ceftriaxone	85%	15%
Amoxicillin	30%	70%
Azithromycine	60%	40%

Table 4: Antibiotic sensitivity pattern of aerobic organisms isolated

ORIGINAL ARTICLE

Metronidazole disc was placed on neomycin blood agar to know the susceptibility of anaerobic organisms. It showed 70% anaerobic organisms were sensitive.

DISCUSSION: Chronic suppurative otitis media (CSOM) is a condition of the middle ear that is characterized by persistent recurrent discharge through a chronic perforation of the tympanic membrane. Due to the perforated tympanic membrane, bacteria can gain entry into the middle ear via the external ear canal. Infection of the middle ear mucosa subsequently results in ear discharge.⁽³⁾

Untreated cases of CSOM can result in a broad range of complications. These may be related to the spread of bacteria to structures adjacent to the ear or to local damage in the middle ear itself.⁽⁹⁾ Such complications range from persistent otorrhoea, mastoiditis, labyrinthitis, facial nerve paralysis to more serious intracranial abscesses or thromboses⁽¹²⁾ Present study shows highest incidence in children below 10 years (75%) in this study comparable with study of Rotimi children below 10 years (70%) incidence.⁽³⁾ Both aerobic(65%), anaerobic (6%), mixed isolates (29%) were observed in present study. Similar findings Aerobic (68%), Anaerobic (6%), Mixed growth (26%) were shown in Erkan M.⁽⁶⁾ Resistance to Ampicillin, Erythromycin shown in this study. Drug resistance varies in studies D. L. Chhangani et al,⁽⁴⁾ Indhudaran et al,⁽⁹⁾ fliss DM Dagan R.⁽¹³⁾

CONCLUSION: Aerobic bacteria were most prevalent in this study. Several of the bacteria identified are known to require iron for their growth. This may be important for CSOM treatment if biofilm formation is involved in pathogenesis. Children with CSOM are at risk developing complication like deafness, mastoiditis, meningitis and encephalitis. The understanding of the pathology and bacteriology of otitis media assumes a practical significance in the prevention of the disease or minimise the complications. The present study was conducted and revealed that highest prevalence of (45%) CSOM caused by staphylococcus, highest sensitivity to Ceftriaxone, Gentamycin and Amikacin.

ACKNOWLEDGEMENT: Authors are thankful to Department of Microbiology, KMC, Kurnool.

REFERENCES:

1. SBS Mann, B. S. Grewal incidence of CSOM in general population Ind J Otol. vol xxviii march1976.
2. Gupta, Vineetha CSOM an aerobic microbiological study LouiInd J Otolvol 4 no.2 June 1998.
3. Rotimi Vo, Okeowo Bacteriology of CSOM East Afr Med J 1992 Jul 69 (7).
4. D. L. Changani, O. P. Goyal Bacteriological study in CSOM Ind J Otolvolxxviii 1976.
5. Scott-Brown's Otolaryngology 5th edition.
6. ErkanM, Aslan T Bacteriology of CSOM Ann Otol Rhinolaryngol 1994 Oct 103(10).
7. N Wabuisi C, Ologe FE Pathogenic agents of CSOM East Afr Med J 2002 Apr 79(4).
8. Wintermeyer SM, NAHATA MC CSOM Ann Pharmacother 1994 Sep 28(9).
9. Indudharan R, Aiyar Antibiotics in CSOM a bacteriological study Ann Otol Rhinolaryngol 1999 may 108 (5).
10. Cruickshank, Diguid, Marmion Swaion, Medical Microbiology Text Book, 1975, No.5.
11. Baily sell and Scott's 7th edition Diagnostic Microbiology.
12. Microbiology of CSOM LoyAH, Tan AL Singapur Med J 2002 June 43(6).

13. Fliss DM, Dagan R Aerobic bacteriology of CSOM without cholesteatoma in children Ann Otol Rhinolaryngol 1992 Oct. 101(10).

AUTHORS:

1. B. Nagajyothi
2. B. Shantireddy
3. P. Venkateswarlu

PARTICULARS OF CONTRIBUTORS:

1. Associate Professor, Department of Microbiology, Government Medical College, Anantapuramu.
2. Associate Professor, Department of Microbiology, Government Medical College, Anantapuramu.
3. Associate Professor, Department of Microbiology, Government Medical College, Anantapuramu.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. B. Nagajyothi,
Associate Professor,
Department of Microbiology,
Government Medical College,
Anantapuramu.
E-mail: nagajyothibeldonu@gmail.com

Date of Submission: 05/01/2015.
Date of Peer Review: 06/01/2015.
Date of Acceptance: 07/01/2015.
Date of Publishing: 10/01/2015.