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BACTERIOLOGICAL STUDY OF CSOM IN A RURAL SETUP AT KONASEEMA INSTITUTE OF MEDICAL SCIENCES AND RESEARCH FOUNDATION, AMALAPURAM

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Abstract: A total number of 100 ear swabs were bacteriologically investigated for the present study. All the swabs collected from patients with clinical diagnosis of CSOM attending ENT outpatient department KIMS, Amalapuram during the Jan – June 2014. All these are new patients who did not have recent treatment with antibiotics either locally or systemically. Another group of 30 ear swabs were collected from healthy individuals with no history of ear discharge for control study. Out of 100 patients 45 are males 55 females. Out of 100 swabs culture 95% culture positive and 5% culture negative. Out of culture positive cases 70% Aerobes and 25% Anaerobes and 5% of Sterile. Out and 99% culture positive cases gram positive Isolates 22(31.42%) Gram Negative Isolates are 48(68.57%). Include different organisms Isolated from 70 were, Pseudomonas aeruginosa 26(37.15%), Staphylococcus Aereus 15(21.43%), Klebsiella Pneumonia 12(17.15%), Proteus Sp 6(8.57%), Escherichia coli 4(5.72%), Coagulase Negative Staphylococcus 5(7.14%), Streptococcus pyogens 1(1%), Sterpcoccus Pneumonia (1%), Anaerobes 25%, Bacteriodes 13(52%), Peptostreptococcus 11(44%), Fusobacterium 1(4%). Among the Antibiotics tested for sensitivity of the Isolates Amikacin stands first followed by Gentamycin, and Ampicillin was found to be least sensitive.

Keywords: Cardiovascular Disease, Diabetes, NT-PROBNP, BNP.



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INTRODUCTION

CSOM is one of the common disease among the practices of otologists and pediatricians. CSOM was found to be single major cause of conductive deafness (Mann, et al 1976). The incidence of CSOM is so high about 30% of the patients attending ENT outpatient departments suffering from CSOM (Suchdev and Bhatia, 1975) about 2.5 % of general population 3 to 4 % childrens suffering from ear (Kacker and Bali, 1972). The understanding of pathology bacteriology of CSOM assuming a practical significance in the prevalence of disease and minimizing complications. It is the duty of the clinician to turn the Bacteriologist to study vast majority of organisms that infect the ear.

CSOM is an insidious, potentially dangerous disease, It is known for chronicity and difficulty to achieve dry ear. It is a disease of multiple and overlapping etiology.

The wide range of microbes both Aerobes and Anaerobes present in CSOM has been subject of Exhaustive investigation.

Anaerobes were invariably isolated together with Aerobes. In a few patients only aerobes, (Scott, Brown otolaryngology 5th Edn 1997)

Method for identifying the Anaerobes with newer improved simplified techniques give a clear picture of Bacterial flora in CSOM (Puspha, Jagetap and Usha, Hardas 1980)

It is evident that many cases pose a difficult problem to the clinician with recurrence and progressive non responsiveness for treatment. Many times reliance is placed on random antibiotic therapy prior to laboratory investigation leading to indiscriminate use of antibiotics. This results in the emergence of Bacterial resistant towards established therapeutic agents (Lakshmi Naidu 1977)

The present study was undertaken to know both aerobic and anaerobic bacterial flora in CSOM and their susceptibility to antibiotics in rural setup, KIMS, Amalapuram.

1. Showing Analysis of ear swab results from study group

	Number	Percent
Total Swabs	100	-
Only Aerobes	70	70%
Only Anaerobes (Non Sporing)	25	25%
Mixed growth of Aerobes & Anaerobes Isolated	0	-
No Growth	5	5%
Total No. of Strains Isolate	95	-

Total Aerobic Strains Isolated	70	70.9%
Total Anaerobic strains Isolated	25	29.1%

2. Different Organisms Isolated from Aerobic Cultures

Organism	Number	Percentage
<i>Pseudomonas aeruginosa</i>	26	37.15%
<i>Staphylococcus aureus</i>	15	21.43%
<i>Klebsiella Pneumoniae</i>	12	17.15%
<i>Proteus Species</i>	6	8.57%
<i>Escherichia coli</i>	4	5.72%
Coagulasenegative staphylococci	5	7.14%
<i>Streptococcus pyogenes</i>	1	1.42%
<i>Streptococcus pneumonia</i>	1	1.42%
Total	70	100%

3. Antibiotic susceptibility pattern of Anaerobic to metronidazole

	No.of Strains	R	S
<i>Bacterioides</i>	13	0	13
<i>Papto streptococcus</i>	11	2	9
<i>Fusobacterium</i>	1	0	1
Total	25	2	23

4. Antibiotic Resistant Pattern of The Aerobic Isolates

Sensitive pattern	Ani	Genta	Cipra	Netil	Cifo	Ery	Cotri	Ampi	Penicillin methicillin
Pseudo(26)	26	25	18	16	8	2	2	0	
Staph awens(15)	15	14	12	5	4	6	5	2	
Kleb(12)	10	9	9	5	1	0	1	0	
Protiens(6)	6	6	5	3	2	1	3	0	
Esch(4)	4	3	3	2	0	1	1	0	
Strep Pyogens(1)	-	-	0	-	1	1	0	0	
CNS(5)	-	-	1	-	1	1	1	1	
S.Pyo(1)	4	3	3	2	3	0	2	0	

DISCUSSION:

The bacteriological study of CSOM revealed isolated of a variety of organisms. Culture analysis revealed that out of 106 swabs studied 100 yielded positive cultures and 6 showed no growth.

Of the 100 positive cultures 54(51%) yielded only aerobic organisms, 36 (34%) yielded both aerobic and anaerobic and 10(9.5%) were having only non-sporing anaerobes. Among the control group of 30, 27 swabs showed positive culture and 3 showed no growth.

Different species isolated from aerobic cultures in this study is shown in (Table – 2). *Pseudomonas aeruginosa* 37.15% is the most predominating organism followed by *Staphylococcus aureus* 21.43%, *Klebsiella pneumonia* 17.15%, *Proteus* species 8.57% *Escherichia coli* 5.72% coagulase negative *Staphylococcus* 7.14% *Streptococcus pyogenes* 1.42% and *Streptococcus pneumonia* 1.42%. The results recollect the statement that “the presence of multiple strains of both gram-negative and positive aerobes is the rule rather than an exception” (Scott Brown’s *Otolaryngology* 5th ed 1987).

Our observation of *pseudomonas aeruginosa* as predominant isolate followed by *Staphylococcus aureus* is in correlation with Rekha Rao & C.S. Bhaskaran (1984) and Lalitha & Satyavani (1984). Laxmipathi & Bhaskaran(1965), Laxmi Naidu(1965), Puspa Jagatap and Usha Hardas(1980) and A.Ayyagari et al reported *Pseudomonas aeruginosa* as predominant isolate. In a quantitative study of both aerobic and anaerobic microbes in active chronic suppurative otitis media, Sweeney, Picozzi and Browning (1982) showed rather exceptionally high counts of *Pseudomonas*. These and many other recent studies stressed the wide spread presence of mixed gram positive and negative organisms in varying proportions, with gram negative aerobes predominating. Nandan Singh & Radha Bhaskar (1972), M.V.Ramarao & Jayakar (1980), Gupta Vineeta et al (1998) had reported *Staphylococcus aureus* as predominant isolate (Table-XI).

The sensitive pattern of the organisms isolated aerobically from CSOM cases to various antibiotics tested, reveals that Gram positive organisms were comparatively more sensitive than Gram negative organisms to all the antibiotics tested. When overall resistance pattern is considered Amikacin was found to be a more effective drug with only 2.7% of resistance followed by Gentamicin 7.1% Ciprofloxacin 22.3%, Nitrofurantoin 50.9%, Cotrimoxazole 70.5%, Cotrimoxazole 77.7%, Erythromycin 80.4% and Ampicillin 94.6%, High resistance is observed with Ampicillin, Erythromycin and Cotrimoxazole.

The present study includes, testing of the susceptibility of anaerobes to Metronidazole. Previously it is thought all the anaerobes are susceptible to Metronidazole and sensitivity to Metronidazole used as one of the identification characteristics of anaerobes. In the present study out of 46 anaerobes 6(13%) showed resistance. *Propionibacterium* (3) and *Peptostreptococcus* (3) were shown resistance towards metronidazole. Metronidazole resistance in anaerobes is mentioned in appropriate chapters of Bailey and Scott’s *Diagnostic Microbiology* 9th ed 1994.

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