ORIGINAL RESEARCH PAPER
Volume-8 | Issue-12 | December - 2019 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

BACTERIOLOGICAL PROFILE OF PATIENTS WITH CHRONIC SUPPARATIVE OTITIS MEDIA ATTENDING AT INTEGRAL INSTITUTE OF MEDICAL SCIENCES AND RESEARCH CENTRE LUCKNOW (U.P.)

Microbiology

Shoeb Khan Department Of Microbiology, IIMS&R

Manzoor Ahmed Thokar* Professor And Head, Department Of Microbiology, IIMS&R *Corresponding Author

Charu Singh Department Of ENT, IIMS&R

ABSTRACT

Chronic supparative otitis media (CSOM) is a common clinical health problem and topical antibiotic is the main treatment, however the emergence of antibiotics resistant strains is leading to failure. Periodic evaluation of microbiological profile and antimicrobial sensitivity pattern of bacteria are essential for optimum medical management of CSOM patients and prevention of antibiotic resistance remains a big challenge.
In our study, chronic suppurative otitis media occurred mainly in the age group of 10-19 years. *Pseudomonas aeruginosa* and *Staphylococcus aureus* were found to be most common cause of CSOM in this study. The isolated microorganism had high susceptibility rates to polymixin B, amikacin in *Pseudomonas aeruginosa* and vancomycin in *Staphylococcus aureus* isolates.

KEYWORDS

CSOM,Bacterial,Sensitivity,Resistance,Incidence,Prevalence

INTRODUCTION

Chronic suppurative otitis media (CSOM) is one of the most common causes of preventable hearing loss especially in developing countries. It is defined as a condition of the middle ear that is characterized by persistent or recurrent discharge for three or four months or more through a perforation of the tympanic membrane[1].

The World Health Organization (WHO) definition for CSOM requires only two weeks of Otorrhoea. According to world health organization (WHO) global burden of CSOM account for 28,000 deaths and a disease burden of over 2 million DALYs (Disability-Adjusted Life year)[2].

The incidence of CSOM is increasing in the developing countries due to poor nutrition, poor hygienic practices and lack of health education . Both gram positive bacteria such as *Staphylococcus aureus, Streptococcus pneumonia* and Gram negative bacterias such as *Pseudomonas aeruginosa, Escherichia coli, Proteus species, klebsiella* species are involved in the pathogenesis of CSOM.

Tuli et al reported that the prevalence of deafness in rural areas is almost double that observed in urban areas[3].

CSOM is a massive health problem and India is one of the countries with highest CSOM prevalence (>4%). It causes conductive and sensor neural hearing loss and got adverse effect on childhood development.

MATERIALS AND METHODS

CULTURE-

The specimen was inoculated on to Blood agar, MacConkey agar and any other media as per the need of isolate. The culture plates were examined after overnight incubation at 37°C for 18-24h, the relative numbers and types of colonies were noted and processed further.

MICROSCOPY-

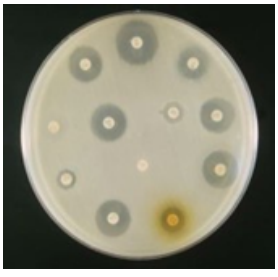
Microscopic examination was done by making a smear from the colony and examining under oil immersion after the gram staining then seen as gram positive or gram negative bacteria.

IDENTIFICATION OF ISOLATES:-

Identification of isolates was done on the basis of colony morphology, motility, catalase, coagulase , oxidase and biochemical tests such as – Indole, Methyl red, VogesProskauer, Urease, Citrate, Nitrate reduction tests, Triple sugar iron agar, Hydrogen sulphide test, Phenylalanine deaminase test and Carbohydrate fermentation tests as per standard protocols.

ANTIBIOTIC SENSITIVITY TEST -

The antimicrobial susceptibility testing was done by Kirby Bauer's Disk Diffusion Method on Mueller Hinton Agar and interpreted as per Clinical Laboratory Standard Institution (**CLSI M100S**) guidelines and antibiotics disks used according to bacterial isolate[4].



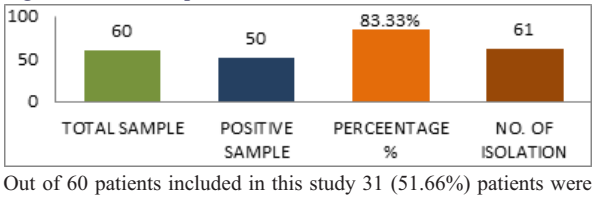
RESULTS

During the study period, total 60 pus swabs were processed from patients of which 39(65%) were male and 21(35%) as females. Out of 60 ear swabs cultured 50(83.33%) had bacterial growth in which 61 bacterial isolates were grown.

TABLE1. Prevalence of positive cultures from bacterial isolates

Total Samples	Positive Samples	Percentage	No. of isolates
60	50	83.33	61

Fig. 1. Prevalence of positive cultures from bacterial isolates.



Out of 60 patients included in this study 31 (51.66%) patients were from OPD and 29 (48.33%) patients were from IPD.

Table.2. Inpatient & Outpatient comparison

OPD	31	51.66%
IPD	29	48.33%
Total	60	100%

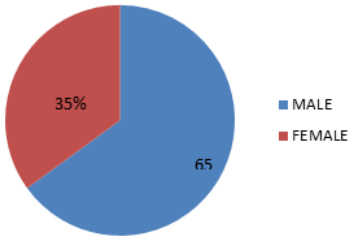
Fig.2.Inpatient & Outpatient comparison

Out of 60 patients who were included in this study, 39 (65%) were males and 21(35%) were females patients.

Table 3 Distribution of patients according to gender

Male/Female	Number of patients	Percent
Total	60	100%

Fig 3-Distribution of patients according to gender

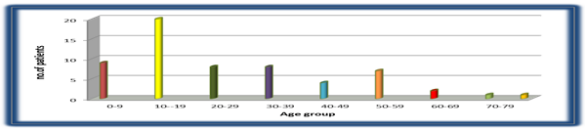


Amongst 60 patients included in the study, maximum number of patients belonged to age group 10-19 years 35%, followed by 15% patients who belonged to 0-9 years , 13.33% patients belonged to 20-29years , 13.33%% patients belonged to age group 30-39, 6.66% patients belong to 40-49years age group, 50-59years age group include 11.66% patients, 3.33% patients belong to 60-69 years age group while the least number of patients(1.66%) belonged to age group 70-79 (Table4, Fig4).

Table 4- Distribution of patients according to age

Age group (years)	Number of patients	Percent
0-9	9	15%
10-19	21	35%
20-29	8	13.33%
30-39	8	13.33%
40-49	4	6.66%
50-59	7	11.66%
60-69	2	3.33%
70-79	1	1.66%
TOTAL	60	100%

Fig4. Distribution of patients according to age

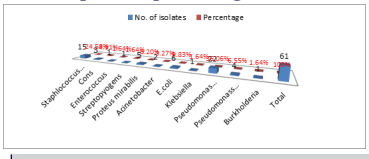


Out of the 60 CSOM patients studied, 61 bacteriological isolates percentage of the most frequent isolates were *Pseudomonas aeruginosa* 22(37.10%) , *Staph aureus* 15(24.19%), *E.coli* 6(9.69%) , *Proteus mirabialis* 5(8.06%), *Pseudomonas spp* 4(6.45) and coagulase negative staphylococcus 3(4.84%) (Table 5 &Fig 5).

Table 5- Distribution of bacterial isolates as positive percentage

Organism(n=61)	No. of isolates	Percentage
Staphlococcus aureus	15	24.59%
Cons	3	4.91%
Enterococcus	1	1.64%
Streptopyogens	1	1.64%
Proteus mirabilis	5	8.2%
Acinetobacter	2	3.27%
E.coli	6	9.83%
Klebsiella	1	1.64%
Pseudomonasaeruginosa	22	36.06%
Pseudomonasspp	4	6.55%
Burkholderia	1	1.64%
Total	61	100%

Fig 5- Distribution of positive percentage bacterial isolates,



DISCUSSION

In risk factors for CSOM poverty, poor hygiene and overcrowding contribute to high rates of CSOM (WHO).CSOM is an important health problem in children and in adults world-wide , it can cause chronic hearing loss which has a negative impact on the development of language , social interaction and speech.

In our study maximum patients 21(35%) were in the age group of 10-19 years which is similar to results reported[5]

Also in our study, a large number of samples (83.33%) had a bacterial infection & *P.aeruginosa* was the predominant bacteria followed by *S.aureus* which are in agreement with other studies[6].

E.coli at 9.83% in our study was the third most common bacteria found & this was on higher side than some other studies in literature.[7]

The highest distribution of CSOM in our study was between the age of 10 to 19 and the least distribution after the age of 60 years.

In our study it was found that CSOM was slightly more common among male patients(65%) than among female patients(35%). This finding is similar to one more study where (61.29%) were males and (38.70%) were females[8].

In our study the most effective antibiotics against *P.aeruginosa* were Polymixin B(100%), followed by piperacillin/Tazobactum(95.65%), and piperacillin(91.30%) which is similar to other studies in which most sensitive antibiotics were pipercillin/tazobactum ((93.30%), followed by piperacillin (79.48%)[9].

Most sensitive antibiotic against P*seudomonas spp* in our study were amikacin (100%), ciprofloxacin (75%) followed by piperacillin and pipperacillin /tazobactum which is similar to result reported in one more study at amikacin (87%), and ciprofloxacin (75%)[10].

In most of the studies of CSOM so far *Burkholderia* has not been isolated much but in our study we could isolate one species of an inpatient which was sensitive to carbapenams and resistance to polymixin B.

Furthermore *staphylococcus aureus* isolated as the second most common cause of CSOM in our study is similar to some more national level studies[11,12]

It was also observed that AST pattern of CSOM has been changing with due course of time. Geographical variation, difference in-patient population & other demographic factors could be the possible factors for variability.

REFERENCES

1. Arvind N, Pavan Chand, Vishrutha K.V. Microbiological profile of Chronic Suppurative Otitis Media. Int J Biomed Res. 2014;05(03):204-6.
2. Acuin J. 2004. Chronic Suppurative Otitis Media. Burden of Illness and Management Options. Geneva: World Health Organization
3. Tuli BS, Parmar TL, Kumar S. Incidence of deafness in school going children in Patiala.Indian J Otol 1988; 40: 137–138.
4. Performance standards for antimicrobial susceptibility testing. 24nd informational supplement; 2 clinical and laboratory standard institute016(M100-S26 edtn), (3):110
5. JoseAcuin, Philippines. Chronic suppurative otitis media Burden of Illness and Management Options. Child and Adolescent Health and Development Prevention of Blindness and Deafness. World Health Organization (WHO), Geneva, Switzerland, 2004.
6. Nazir A, Kadri SM. Aerobic bacteriology of chronic suppurative otitis media: a hospital based study. Int J Res Med Sci. 2014;2(4):1521-5
7. .Raghu Kumar KG, Navya S, Basavarajappa KG. A Study of Bacterial Profile and Antibiotic Susceptibility Pattern of Chronic Suppurative Otitis Media among Patients attending a Tertiary Care Centre, Davangere. Sch J App Med Sci. 2014;2(5B):1606-12
8. .Kumar H, Seth S. Bacterial and Fungal Study of Chronic Suppurative Otitis Media. J ClinDiagn Res. 2011;5(6):1224-7.
9. Nazir A, Kadri SM. Aerobic bacteriology of chronic suppurative otitis media: a hospital based study. Int J Res Med Sci. 2014;2(4):1521-5
10. Loy AH, Tan AL, Lu PK. Microbiology of chronic suppurative otitis media in Singapore. Singapore Med J 2002;43:296-9
11. Fairbanks D. Pocket Guide to antimicrobial therapy in Otolaryngology – Head and Neck surgery. In: Alexendria VA, editor. 8th ed. The American Academy of Otolaryngology –Head and Neck surgery Foundation. 1996. p. 1-9
12. Friedmann I. The pathology of acute and chronic infections of the middle ear cleft. Ann OtolRhinolLaryngol 1971;80:391-6.