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ORIGINAL ARTICLE

MICROBIOLOGICAL AND THEIR ANTIMICROBIAL SUSCEPTIBILITY PATTERN IN PATIENTS WITH CHRONIC DISCHARGING EAR DISEASE

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ABSTRACT: AIM: Aim is to find out the bacteriological flora and their susceptibility pattern in patients with chronic discharging ear in tertiary care centre, Ranchi, Jharkhand. **DESIGN:** Prospective study. **METHODS:** A total of 30 patients with unilateral or bilateral active chronic discharging ear patient attending OPD and Indoor, ENT Department, RIMS were included. **RESULT:** A total of 30 patients were studied with unilateral and bilateral discharging ear. The microbiology of ear swab taken from 30 patients were evaluated and the most common pathogen isolated was Staphylococcus aureus (73.33%) followed by Pseudomonas aeruginosa (20%), Coliforms (6.67%). Staphylococcus aureus were found to susceptible to levofloxacin (86.36%), gentamicin (86.36%), and ciprofloxacin (81.81%) and pseudomonas aeruginosa were resistant to ciprofloxacin and cloxacillin and susceptible to amikacin (83.33%), lomefloxacin (66.67%), and azithromycin (50%). **CONCLUSION:** Staphylococcus aureus was the most common pathogen isolated from ear swabs of patients with chronic discharging ear disease. This study determines the prevalent bacterial organism with antibiotic susceptibility to start empirical treatment and thus, to prevent the emergence of resistant strain.

KEYWORDS: Chronic otitis media, susceptibility, ear discharge, microbiology susceptibility.

INTRODUCTION: Chronic suppurative otitis media (CSOM) has been an important cause of middle ear disease since prehistoric times. Its incidence appears to depend to some extent on race and socio-economic factors. It may result in permanently disabling and potentially fatal complications. The organism isolated in CSOM can be aerobes, anaerobes mixed or fungi.[1]

The causative infection may be in the nose, paranasal sinuses or in the oropharynx, and can lead to ascending infection of the Eustachian tube.[2] In a discharging ear both topical and systemic therapy is employed to control infection.[3,4]

Due to irrational use of wide-spectrum antibiotics, problem of resistance become very common. So choice of antibiotics therapy depends on the organism isolated in the culture.[5]

MATERIAL AND METHODS: This is a prospective observational study conducted in tertiary care centre, Ranchi, Jharkhand over 30 patients attended outdoor and indoor with ear discharge with signs and symptoms of chronic otitis media. Detailed history and examination were done. All patients having ear discharge for more than 3 months duration were included.

Commercially available single use cotton swabs were used to collect pus and care was taken to avoid surface contamination and swab was sent to microbiology department for bacteriological pattern and antibiotics susceptibility assessment. All micro-organism isolated were identified using standard microbiological methods, and their antimicrobial sensitivity performed using Kirby-Bauer disc diffusion method.

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RESULT: There were total 30 patients of age ranged from 10 years to 60 years were included in the study. Male to female ratio is 21: 9.

TYPE OF OTITIS MEDIA	SEX	NO. OF CASES	%
CSOM	MALE	21	70
CSOM	FEMALE	9	30

TABLE 1: SEX DISTRIBUTION

Staphylococcus aureus were isolated in 22 cases followed by Pseudomonas aeruginosa in 6 cases, while 2 cases showed coliforms. In total, Staphylococcus aureus were found susceptible to gentamicin and levofloxacin in 86.36% cases, ciprofloxacin in 81.81% cases followed by lomefloxacin in 77.27%, amikacin in 68.18%, ampicillin in 54.55%, erythromycin (18.18%), and cloxacillin (13.63%).

Drug susceptibility of Pseudomonas aeruginosa, of total 6 isolates, 83.33% were found susceptible to amikacin, 66.67% to lomefloxacin, azithromycin to 50%, and 100% isolates were showed resistant to ciprofloxacin and cloxacillin.

Coliforms showed 100% resistance to amoxicillin and ampicillin while 100% susceptibility towards amikacin and gentamicin.

	ANTIBIOTIC	SUSCEPTIBLE %	RESISTANT %
1.	GENTAMICIN	86.36	13.63
2.	LEVOFLOXACIN	86.36	13.63
3.	CIPROFLOXACIN	81.81	18.182
4.	LOMEFLOXACIN	77.27	22.73
5.	AMIKACIN	68.18	31.82
6.	AMPICILLIN	54.55	45.45
7.	ERYTHROMYCIN	18.18	81.82
8.	SPARFLOXACIN	27.27	72.73
9.	CLOXACILLIN	13.63	86.36
10.	AZITHROMYCIN	13.63	86.36

TABLE 2: STAPHYLOCOCCUS AUREUS

	ANTIBIOTIC	SUSCEPTIBLE%	RESISTANT%
1.	AMIKACIN	83.33	16.67
2.	GENTAMICIN	66.67	33.33
3.	LOMEFLOXACIN	66.67	33.33
4.	AZITHROMYCIN	50	50
5.	LEVOFLOXACIN	16.67	83.33
6.	AMPICILLIN	16.67	83.33
7.	CIPROFLOXACIN	0	100
8.	CLOXACILLIN	0	100

TABLE 3: PSEUDOMONAS AERUGINOSA

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	ANTIBIOTIC	SUSCEPTIBLE %	RESISTANT %
1.	AMOX/CLAV	0	100
2.	AMPICILLIN	0	100
3.	AMIKACIN	100	0
4.	GENTAMICIN	100	0

TABLE 4: COLIFORMS

DISCUSSION: Usually the most common pathogen isolated around world in CSOM patient is Pseudomonas species and less commonly Staphylococcus species,[6,7] and coliforms, occasionally fungi and viruses. Some studies revealed to have higher incidence of CSOM among males than female,[8] but others have found female preponderance.[9] Early bacteriological evaluation of isolates will assure accurate and effective therapy.

Ear swab microbiological studies of chronic discharging ear revealed that the most frequently isolated bacteria was Pseudomonas aeruginosa (30.96%), Staphylococcus aureus (29.65%), and coliform (14.2%).[10] and Pseudomonas aeruginosa (31.1%), Staphylococcus aureus (19.1%), Proteus species (7.7%), Klebsiella species (1%) and fungi.[11]

In our study, the most common pathogen isolated is Staphylococcus aureus (73.33%) followed by Pseudomonas aeruginosa (20%) and coliforms (6.67%).

Some studies also revealed that the most common micro-organism isolated were Staphylococcus aureus (37.6%) followed by Pseudomonas aeruginosa (32.8%), Klebsiella pneumoniae (4%). E. coli (3.2%), streptococcus pneumoniae (1.6%) and Proteus mirabilis (0.8%).[12]

Staphylococcus aureus susceptibility with ciprofloxacin was 81. 81% in our study. In some of the study, susceptibility with ciprofloxacin was on lower side (55.3%) [12], and were on higher side (83.0%-95.0%).[13,14,15] Staphylococcus aureus were resistant with ampicillin in 45. 45% cases. But, in study at Rawalpindi by Aslam, et al [16] resistance with ampicillin and amoxicillin was found to be 77.2%.

Pseudomonas aeruginosa showed 83.33% sensitivity with amikacin, 66.67% with gentamicin in our study. Mirza, et al,[17] found sensitivity of 45% with gentamicin and 48% with amikacin. Tahir, et al,[14] observed sensitivity of 60% with gentamicin and 70% with amikacin.

In our study, Coliforms showed 100% sensitivity towards amikacin and gentamicin, and 100% resistance to ampicillin.

CONCLUSION: Our study showed, Staphylococcus aureus, most common organism isolated and susceptibility towards gentamicin was 86.36% and towards ciprofloxacin 81.81% and followed by Pseudomonas and Coliforms. The study showed increasing resistance to commonly used ant microbiological agents. Thus, evaluation of microbiological profile and their antimicrobial susceptibility pattern will be helpful in prescribing specific antibiotics and preventing further emergence of resistance.

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