

Original research article

A Retrospective Study of Recent Trends in Spectrum of Bacteria Isolated from Patients with Ear Discharge in North Gujarat (India)

¹Dr. Devendra M. Jain, ² Dr. Sadhna Yadav, ³Dr. Nayanna Karodpati

¹Associate professor, Department of Otorhinolaryngology & Head Neck Surgery, Banas Medical College and Research Institute Palanpur, Gujrat

²Associate professor, Department of Otorhinolaryngology & Head Neck Surgery, Banas Medical College and Research Institute Palanpur, Gujrat

³Professor, Department of Otorhinolaryngology, Dr. D.Y Patil Medical College and Research Institute, Pimpri

Corresponding Author: Dr. Devendra M. Jain

Abstract

INTRODUCTION

Prevalence of Otitis Media in Indian children is approximately 11.66%. Hence It accounts for significant hearing and learning impairment in children, loss of working hours in adults and is one of the major healthcare expense burden for the society. Recent years have seen important changes in the bacterial spectrum involved in the active phase of mucosal chronic suppurative otitis media. This study is an attempt to study those changes, so as to raise an alarm towards need for change in guidelines for its management

MATERIALS AND METHODS:

Retrospective DATA of ear pus culture sensitivity collected from 100 patients suffering from active mucosal chronic suppurative otitis media was collected from ENT OPD of Banas Medical College, palanpur, and analysed by the standard disk diffusion method.

OBSERVATIONS & RESULTS:

Following table summarises AND PROPORTIONATELY QUANTIFIES the commonly isolated bacteria from pus in patients with safe CSOM:

Organism isolated & %	PSEUDOMONAS AERUGINOSA	45%	MR-CONS	30%	STAPH AUREUS	22%	PROTEUS, E. COLI, KLEBSIELLA	3%
OXACILLIN	R		R		S (IN 75% ISOLATES)		R	
PIPERACILLIN	S (IN 50% ISOLATES)		R		R		R	
TICARCILLIN	S (IN 50% ISOLATES)		R		R		R	
CEFAZOLIN	R		R		S		R	
CEFUROXIME	R		R		S		R	
CEFIXIME	R		R		S		R	
CEFOTAXIME	R		R		S		R	
CEFTAZIDIME	S (IN 100% ISOLATES)		R		S		R	
CEFOPERAZONE	S (IN 100% ISOLATES)		R		S		R	
CEFEPIME	S (IN 100%		R		S		S	

	ISOLATES)						
AMOXY-CLAVULANATE	R		R		S (IN 90% ISOLATES)		R
PIPERACILLIN TAZOBACTUM	S (IN 100% ISOLATES)		R		S		R
TICARCILLIN CLAVULANATE	S (IN 70 % ISOLATES)		R		S		R
CEFOPERAZONE SULBACTUM	S (IN 100 % ISOLATES)		R		S		R
CEFEPIME TAZOBACTUM	S (IN 100 % ISOLATES)		R		S		S
CARBAPENEMS	S (IN 100 % ISOLATES)		R		S		S
AZTREONAM	S (IN 100% ISOLATES)		R		S		S
AMINOGLYCOSIDES (AMIKACIN, GENTAMICIN)	S (IN 80% ISOLATES)		S (IN 65% ISOLATES)		S (IN 90% ISOLATES)		R
FLUOROQUINOLONE (OFLOX, LEVOFLOX, MOXIFLOX)	S (IN 70% ISOLATES)		S (IN 20% ISOLATES)		R		R
TETRACYCLINES	R		S (IN 100% ISOLATES)		S (IN 90% ISOLATES)		S
MACROLIDES	R		S (IN 20% ISOLATES)		R		R
CLINDAMYCIN	R		S (IN 55% ISOLATES)		S (IN 50% ISOLATES)		R
VANCOMYCIN, TEICOPLANIN	R		S (IN 80% ISOLATES)		S (IN 65% ISOLATES)		R
LINEZOLID	R		S (IN 100% ISOLATES)		S		R
TRIMETHOPRIM SULPHAMETHOXAZOLE	R		S (IN 55 % ISOLATES)		S (IN 40% ISOLATES)		S
CHLORAMPHENICOL	R		S (IN 75% ISOLATES)		S (IN 90% ISOLATES)		S
POLYMYXIN B, COLISTIN	S (IN 40% ISOLATES)		R		R		R

(Abbr: MR-CONS: methicillin resistant coagulase negative staph aureus,

STAPH: STAPHYLOCOCCUS AUREUS, E. COLI- ESCHERICHIA COLI, S-SENSITIVE, R-RESISTANT)

Hence, in this study, most common organisms isolated from ear discharge of patients with active mucosal chronic suppurative otitis media are Pseudomonas aeruginosa (45%), methicillin resistant coagulase negative Staphylococcus aureus (30%), Staphylococcus aureus (22%), others (Proteus, Escherichia coli, Klebsiella- 3%)

Majority of Isolated pseudomonas strains showed multi-drug resistance, but uniform sensitivity to Third generation Cephalosporins (Ceftazidime), Carbapenems and Aztreonam. They showed partial sensitivity to Aminoglycosides (gentamicin, amikacin), Fluoroquinolones (ciprofloxacin, ofloxacin, levofloxacin, moxifloxacin) and Lipopeptides (Polymyxin B, Colistin).

Majority of methicillin resistant coagulase negative Staphylococcus Aureus showed uniform sensitivity to Amoxicillin clavulanate, tetracyclines, Linezolid, Aminoglycosides and Chloramphenicol.

They showed partial sensitivity to Oxacillin, Vancomycin, Teicoplanin, Clindamycin and trimethoprim-sulphamethoxazole.

Other gram negative Aerobes isolated like Proteus, E. Coli, Klebsiella showed sensitivity to Tetracyclines, Trimethoprim-sulphamethoxazole, Chloramphenicol, fourth generation cephalosporins (cefepime), Carbapenems and Aztreonam.

Conclusion:

Hence, In developing countries with scarce health care resource allotment, it is recommended to use antibacterial therapy as per local culture isolate sensitivity patterns. Here, in North Gujarat region of India, we recommend following antibiotics for empirical therapy of ear discharge in patients with active mucosal chronic suppurative otitis media: Chloramphenicol/ Fluoroquinolones/ Gentamicin/ Polymyxin B topically. If systemic antibiotics are needed, Fluoroquinolones/ Aminoglycosides/ Amoxicillin-clavulanate/ Oxacillin/ Tetracyclines/ Linezolid/ Carbapenems are recommended.

REFERENCES:

1. Antimicrobial susceptibility patterns of bacteria isolated from patients with ear discharge in Jimma town, southwest, Ethiopia: Kasahun Gorems...
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6278048>
2. Predominant bacteria detected from middle ear fluid of children experiencing otitis media: a systematic review: Chinch C. Ngo....
<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0150949>
3. Bacterial otitis media in sub-Saharan Africa: a systematic review and meta-analysis: tewodros tesfa...
<https://bmcinfectdis.biomedcentral.com/articles/10.1186/s12879-020-4950-y>
4. Antibiotic resistant bacteria are major threats of otitis media in Wollo area, north eastern Ethiopia: A ten year retrospective analysis: Ayele Argaw-Denboba...
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4745944/>
5. Emergence of antibiotic resistance in bacteria isolated from tubotympanic type of chronic suppurative otitis media in Chhattisgarh: B. R. Singh...
<https://www.ijorl.com/index.php/ijorl/article/view/1858>
6. Changing microbiological trends in cases of CSOM: Int J Cur Rev. 2013;5(15):76-8... Bansal S..
7. Microbiological profile of CSOM in a tertiary care hospital. Int J Sci Res. 2014;3(2):474-5... Rejitha...