

Evaluation of Microbiological Profile Among Patients with Ear Discharge at a Tertiary Care Centre

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Article History

Received: 03 Apr 2015

Revised: 22 Apr 2015

Accepted: 10 May 2015

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ABSTRACT

Background: The study was conducted to assess the Microbiological Profile Among Patients with Ear Discharge.

Materials and Methods: This study comprised of 20 subjects with ear discharge. The subjects had been informed about the procedure and were asked for consent. The subjects who were willing to take part in the study were included while those who weren't willing to participate were excluded from the study. The mean age of the subjects was 30.3 years. The specimens were collected from the ear of each subject and were cultured using nutrient agar. The microbiological profile as well as the demographic information of the subjects was recorded. Statistical analysis was conducted using SPSS software.

Results: In this study, there were 20 subjects, out of which 11 were males and 9 were females. Staphylococcus aureus was evident in 7 subjects, Enterococcus was evident in 6 subjects, Pseudomonas aeruginosa was seen in 5 subjects, Klebsiella was observed in 1 subject and E. coli was also seen in 1 subject.

Conclusion: The most common species found in this study was Staphylococcus aureus.

KEYWORDS: Microbiology, Ear Discharge, Nutrient Agar.

INTRODUCTION

Antimicrobial Otitis externa is an inflammation of the external auditory canal, characterised by erythema and oedema. It has a 12-month period prevalence of 1.3% in females and 1.2% in males.^{1,2} Patients typically present with otalgia and an infected discharge. However, there is generally no change in hearing unless the entire canal is obstructed. Movement of the tragus results in significant discomfort. On otoscopy the canal appears narrowed and inflamed, with infected squamous debris lining the walls. Initial treatment centres around the administration of topical medications and, to minimise further irritation, patients should be advised not to poke anything into the ears or get them wet. They should also avoid swimming and getting their head wet. If there is a chance that the ears may get splashed, cotton wool coated with Vaseline® can be used as an ear plug. Topical preparations containing an antimicrobial with a steroid are an effective treatment, and in general there is no difference between the various types of preparation. However, choice is important if a fungal infection is suspected, on the basis of severe pruritus and hyphae

within the external canal. Take a swab for culture and sensitivity and use a preparation such as Locorten-Vioform®, which treats both bacterial and fungal infections. Provided there is neither systemic infection nor serious underlying disease, there is no need for systemic antibiotics.³⁻⁶ The World Health Organization defines chronic suppurative otitis media (CSOM) as ear discharge through a perforated tympanic membrane present for more than 12 weeks.¹ It is characterized by a chronic inflammation of the middle ear and mastoid cavity, followed by permanent abnormality of the pars tensa or flaccida. Varying degrees of edema; submucosal fibrosis and hypervascularity; and infiltration with lymphocytes, plasma cells, and histiocytes result in the production of pus discharge.² A Malaysian study showed that the prevalence of CSOM among school children was approximately 2%.¹

Irrational use of antibiotics and poor patient compliance, resulting in organism resistance to commonly used drugs, has led to treatment failure. The doubt regarding the possibility of the emergence of bacterial resistance

following prolonged use of ototopical medications was also raised in persistent otorrhoea. Therefore, there is a need to re-evaluate the sensitivity and resistance of isolated bacteria toward available antibiotics.² The present study was conducted to assess the Microbiological Profile Among Patients with Ear Discharge.

MATERIALS AND METHODS

This study comprised of 20 subjects with ear discharge. The subjects had been informed about the procedure and were asked for consent. The subjects who were willing to take part in the study were included while those who weren't willing to participate were excluded from the

study. The mean age of the subjects was 30.3 years. The specimens were collected from the ear of each subject and were cultured using nutrient agar. The microbiological profile as well as the demographic information of the subjects was recorded. Statistical analysis was conducted using SPSS software.

RESULTS

In this study, there were 20 subjects out of which 11 were males and 9 were females. Staphylococcus aureus was evident in 7 subjects, Enterococcus was evident in 6 subjects, Pseudomonas aeruginosa was seen in 5 subjects, Klebsiella was observed in 1 subject and E. coli was also seen in 1 subject.

Table 1: Gender-wise distribution of subjects

Gender	Number of subjects	Percentage
Males	11	55%
Females	9	45%
Total	20	100%

Table 2: Microbiological profile

Organism	Number of subjects	Percentage
Staphylococcus aureus	07	35%
Enterococcus spp.	06	30%
Pseudomonas aeruginosa	05	25%
Klebsiella spp.	01	05%
Escherichia coli	01	05%
Total	20	100%

DISCUSSION

Ear discharge is a common presentation in medical practice. It affects people of all age groups but primarily it is a condition of children.³⁻⁵ inflammatory conditions of the external and middle ear account for most ear discharges. These include acute and chronic otitis externa, acute otitis media, chronic suppurative otitis media with or without cholesteatoma, and malignant otitis externa.^{6,7} It may also occur as a result of tympanostomy and ventilation tube insertion.^{8,9}

Chronic suppurative otitis media (CSOM) is defined as chronic inflammation of middle ear and mastoid cavity that may present with recurrent ear discharges or otorrhoea through a tympanic perforation.¹⁰ Incidence of this disease is higher in developing countries especially among low socio-economic society because of malnutrition, overcrowding, poor hygiene, inadequate health care, and recurrent upper respiratory tract infection.¹¹ The urban to rural ratio of the disease is 1:2 and the poorer rural communities have highest prevalence.¹² This study was conducted to assess the Microbiological Profile Among Patients with Ear Discharge.

In this study, there were 20 subjects, out of which 11 were males and 9 were females. Staphylococcus aureus was evident in 7 subjects, Enterococcus was evident in 6 subjects, Pseudomonas aeruginosa was seen in 5 subjects, Klebsiella was observed in 1 subject and E. coli was also seen in 1 subject. Prakash R et al (2013)¹³ isolated the organisms associated with CSOM and to detect the antibiogram of the aerobic isolates. A total of 204 patients clinically diagnosed of CSOM were enrolled in the study and the samples were obtained from each patient using sterile cotton swabs and cultured for microbial flora. Drug susceptibility testing for aerobic isolates was conducted using Kirby-Bauer disc diffusion method. The most common causative organisms isolated were Staphylococcus aureus (48.69%) and Pseudomonas aeruginosa (19.89%) amongst the 191 aerobic isolates. Anaerobes accounted for 29.41% of the isolates while 12.25% were fungi. Antimicrobial profile of aerobic isolates revealed maximum sensitivity to amikacin (95.5%), ceftriaxone (83.4%) and gentamicin (82.7%). Knowing the etiological agents of CSOM and their antimicrobial susceptibility is of essential importance for

an efficient treatment, prevention of both complications and development of antibiotic resistance and finally, the reduction of the treatment costs. Muluye D et al (2013)¹⁴ determined the bacterial isolates and their drug susceptibility patterns from patients who had ear infection. A standard biochemical procedure was used for full identification of bacterial isolates. Antimicrobial susceptibility tests were done on Mueller-Hinton agar by using disk diffusion method. A total of 228 ear discharge samples were tested for bacterial isolation and 204 (89.5%) cases were found to have bacterial isolates. From the total bacterial isolates, 115 (56.4%) were gram negative bacteria and the predominant isolate was proteus species (27.5%). Of individuals who had ear infection, 185 (90.7%) had single bacterial infection while 19 (9.3%) had mixed infections. Under five children were more affected by ear infection. The prevalence of ear infection was significantly high in males (63.7 vs 36.3%) (P=0.017). Of all bacterial isolates, 192 (94.1%) had multiple antibiotic resistant pattern. Non Lactose Fermenter Gram Negative Rods (46.0%), Klebsella species (47.7%) and Pseudomonas species (48.5%) were resistant against the commonly used antibiotics. The prevalence of ear infection was very high in the study area. Majority of the bacterial isolates were resistant to multiple antibiotics. Hence antibiotics susceptibility test is mandatory before prescribing any antibiotics.

CONCLUSION

The most common species found in this study was *Staphylococcus aureus*.

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How to cite the article: Mir Abbas Hussain. Evaluation of Microbiological Profile Among Patients with Ear Discharge at a Tertiary Care Centre. *Int J Med Res Prof.* 2015, 1(3); 280-82.