

# Physiological Comparison of Topical versus Systemic Ciprofloxacin in the Management of Uncomplicated Active Chronic Suppurative Otitis Media

Manish Sharma<sup>1</sup>, Gh. Mohd. Mir<sup>2</sup>, Megha Kapoor<sup>3</sup>

1- Senior Resident, Department of ENT and Head & Neck Surgery, Government Medical College, Jammu. 2- Post Graduate student in Department of ENT and Head & Neck Surgery, Government Medical College, Jammu. 3- Post Graduate in Department of Physiology, Santosh Medical College, Ghaziabad, U.P.

Correspondence to:  
Dr. Manish Sharma, Senior Resident, Department of ENT and Head & Neck Surgery, Government Medical College, Jammu.  
Contact Us: www.ijohmr.com

## ABSTRACT

**Introduction:** Chronic suppurative otitis media (CSOM) with discharge is labelled as 'active ear'. Use of topical ciprofloxacin alone or in combination with systemic ciprofloxacin has remained the treatment of choice for an active ear since long but the individual role of each (topical and systemic) is not much documented. **Materials and Methods:** This prospective randomized interventional clinical trial was done to study the efficacy of topical ciprofloxacin ear drops in comparison with systemic oral ciprofloxacin as first line management in patient diagnosed with uncomplicated discharging CSOM. Study was conducted on 80 patients who presented with an acute episode of CSOM in our OPD. **Results:** This study was conducted in 80 patients and proteus species was the most common microorganism isolated in 53% patients followed by pseudomonas in 36% patients. All organisms were sensitive to ciprofloxacin. Topical ciprofloxacin obtained a clinical cure of 94% over a period of 10 days while as oral ciprofloxacin for the same duration obtained a cure rate of only 73% emphasizing the fact that topical ciprofloxacin therapy was found to be more effective treatment for an acute on chronic otitis media than oral ciprofloxacin therapy. **Conclusion:** In the absence of systemic infection or serious underlying disease, topical antibiotic alone constitute first line treatment for most patients with uncomplicated CSOM, finding no evidence that systemic antibiotics improve treatment outcomes compared with topical antibiotic alone.

**KEYWORDS:** Proteus, Pseudomonas, Topical

## INTRODUCTION

Chronic suppurative otitis media is one of the commonest infective conditions seen in all the age groups. It occurs due to chronic infection of middle ear resulting in persistent otorrhea, hearing loss, mental disturbance and can lead to life threatening complications if not managed in time. The incidence of CSOM appears to depend on race and socioeconomic factors. Socio-economic factors such as poor living conditions, overcrowding, poor hygiene and nutrition have been suggested as a basis for the widespread prevalence of CSOM.<sup>1-4</sup> There is a growing concern over the use of systemic antibiotics and development of bacterial resistance. The present study was carried to find out the organisms responsible for CSOM by taking the ear swab for culture and sensitivity and to study the efficacy of topical versus systemic ciprofloxacin in the treatment of uncomplicated discharging CSOM.

## MATERIAL AND METHODS

This is a time bound study done on 80 patients who presented to the ENT OPD at a tertiary health centre from

June 2013 to May 2014, with an acute episode of uncomplicated CSOM. Patients were selected according to the inclusion and exclusion criteria over the study period.

### Inclusion Criteria:

- Age > 19 years.
- Acute episode of uncomplicated CSOM.

### Exclusion Criteria:

- Age < 19 years.
- Complicated CSOM.
- Underlying systemic disease.
- Any other systemic infections.
- Acute otitis media.

Patient with uncomplicated discharging CSOM who were eligible for the study were explained about their condition, and a written consent was obtained for the study. Baseline audiometry was done in all patients participating in the study. The patients were then divided into 2 groups by random sampling method.

**Group-1:** Topical ciprofloxacin ear drop therapy for 10

How to cite this article:

Sharma M, Mir GH, Kapoor M. Physiological Comparison of Topical versus Systemic Ciprofloxacin in the Management of Uncomplicated Active Chronic Suppurative Otitis Media. *Int J Oral Health Med Res* 2015;2(3):1-2.

days (40 patients).

**Group-2:** Systemic (oral) ciprofloxacin for 10 days (40 patients).

Aural toilet was done in all the patients on first day of study by mild syringing with normal saline after taking the specimen with a sterile swab for culture and sensitivity, taking utmost care to avoid contact with external auditory canal by using a sterilized aural speculum. One swab was taken from each affected ear and immediately transferred to Stuart's medium then the specimens were sent to a microbiological lab for a culture and sensitivity study. Swabs were directly plated on blood agar, MacConkey agar and Chocolate agar. The plates were incubated at 37°C aerobically for 24 to 48hrs in an incubator. The primary colony of the cultured bacteria was identified by gram stain and biochemical tests. Culture and sensitivity of isolates were determined by Kirby – Bacier disk diffusion method.

In Group-1, ciprofloxacin hydrochloride 0.3% ear drops (3 drops) was to be used thrice a day for 10 days in the affected ear. In Group-2, tab. Ciprofloxacin (500mg) twice a day was to be administered for 10 days.

Patients were advised to prevent water entry into affected ear and dry mopping before putting the ear drops. At the patient's next visit, 10 days after treatment a detailed assessment of the ear discharge was done subjectively and objectively and repeat ear culture and sensitivity test was performed if drainage was still present. Audiometry was performed again in all the patients participating in the study at the end of 10 days.

## OBSERVATIONS

This study was conducted in 80 patients, 60 (75%) were males, and 20 (25%) patients were females.

In the study population, proteus species is the most common microorganism isolated in 53% patients followed by pseudomonas in 36% patients. All organisms were sensitive to ciprofloxacin. [Table 1]

	Patients	%age	Ciprofloxacin sensitivity
<b>Proteus</b>	42	53	Sensitive
<b>Pseudomonas</b>	29	36	Sensitive
<b>Others</b>	9	11	Sensitive
<b>Total</b>	<b>80</b>	<b>100</b>	

Table 1. Isolated organisms and ciprofloxacin sensitivity

Topical 0.3% ciprofloxacin was more effective as compared to systemic (oral) ciprofloxacin in the treatment of an acute episode of uncomplicated CSOM. Topical ciprofloxacin obtained a clinical cure of 94% over a period of 10 days while as oral ciprofloxacin for the same duration obtained a cure rate of only 73%.

Pure tone audiometry done on the first day of study and at the completion of study did not reveal any adverse effect on hearing from topical / systemic use of ciprofloxacin for the study period of 10 days.

## DISCUSSION

Topical ciprofloxacin was found to be much more effective than oral ciprofloxacin. The administration of an antibiotic in an acidic medium helps restore and fortify the normal host defense mechanism, therefore, increases the efficacy of antibiotic used. Topical quinolones are not ototoxic and hence can be safely used in active CSOM. Site of infection is exposed to higher concentration of the antibiotic solution by topical administration. The possibility of antibiotic resistance is much less with the topical route as compared to systemic administration. Topical route also avoids systemic side effects, and normal flora in gastrointestinal and respiratory tracts is not exposed to antibiotics.<sup>1,5,2,4</sup> Topic ear drops are much less expensive than systemic medications, hence, the cost of treatment is also reduced.

## CONCLUSION

In our study proteus was the most common organism isolated followed by pseudomonas. Topical ciprofloxacin was found to be much more effective than oral ciprofloxacin in the treatment of an acute episode of uncomplicated CSOM.

## REFERENCES

1. S Eposito, S Noviello, GD Errico, C Montanaro. Topical and oral treatment of chronic otitis media with ciprofloxacin. Arch Otolaryngol Head Neck Surg 1990;116(5):557.
2. JM Loy, AL Tan, PKS Lu. Microbiology of Chronic suppurative otitis media – frequency of Pseudomonas aeruginosa in patients and its sensitivity to various antibiotics. Professional Medical Journal 2007;13(3):411-15.
3. VK Poorey, A Iyer, R Kalra. Study of Bacterial flora in CSOM and its clinical significance. Indian Journal of Otolaryngology and Head and Neck Surgery. 2002;54(2):91-5.
4. GS Renukananda, Santosh U.P, Nitha Mary Geoge. Topical Vs Combination Ciprofloxacin in the Management of Discharging Chronic Suppurative Otitis Media. J Clin Diag Res. 2014;8(6):01-04.
5. M Kiris, M Berktas, E Egeli et al. The efficacy of ciprofloxacin in the treatment of chronic suppurative otitis media. Ear Nose Throat J 1998;20(77):904-5.

Source of Support: Nil  
Conflict of Interest: Nil