

# Comparative study of modalities of treatment in patients with acute otitis externa

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## Abstract

**Background:** Acute Otitis externa (OE) is an very common condition with inflammatory process of the external auditory cana (EAC). It is a very common condition, severely painful, characterised by otalgia, otorrhoea, conductive hearing loss and the presence of exudate in an oedematous ear canal. Otitis externa can be potentially life-threatening infection in immune compromised patients Despite a wealth of data supporting topical treatment for ear infections when drops can reach the site of infection, inappropriate antimicrobial prescribing for Otitis externa appears to occur frequently, based on literature reports. So, our study will be done to compare the efficacy of pain reduction in different modalities of treatment of otitis externa.

**Keywords:** acute otitis externa.

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## INTRODUCTION

Acute Otitis Externa(AOE) is an common condition with inflammatory process of the external auditory canal(EAC)<sup>1</sup> If otitis externa is not optimally treated, especially in immune compromised patients, the potentially life-threatening infection can spread to the surrounding tissues<sup>2</sup> Common pathogens implicated in acute otitis externa include *Pseudomonas aeruginosa* (50%), *Staphylococcus aureus* (23%), anaerobes and gram-negative organisms (12.5%) and yeasts (12.5%)<sup>6</sup> Glycerol and Ichthammol solution has a specific antistaphylococcal action.<sup>7,8</sup> Steroid-antibiotic cream can serve both functions. Steroid reduces edema by its action over capillary wall tone and antibiotic controls overall infection. Treatment includes

antibiotics and analgesics systemically but local aural packing. Our study was be done to compare the efficacy of pain reduction, Edema reduction in different modalities of treatment of acute otitis externa(AOE). Objective was to find the efficacy, the tolerance and impact of acetic acid drops, steroid+antibiotic drops, Ichthammol glycerine(IG) pack and steroid+antibiotic pack in the treatment of acute otitis externa(AOE)..

## MATERIALS AND METHODS

The present study is Prospective Observational Study, and was conducted in the department of otorhinolaryngology, A. J. Institute of Medical sciences, Mangalore after clearance by Institutional Ethics Committee for Human Subjects Research.

All clinically diagnosed cases of Acute otitis externa(AOE) attending the Department of E.N.T in our institute, from October 2016 to July 2017, were included in study.

Exclusion of patients less than 2 years of age, with external ear deformity, with previous history of ear trauma, with periaural abscess, chronic otitis media with perforation and mastoiditis, with history of previous ear surgery, known or suspected allergy to any component of study medication(s) and who don't consent and are not willing for treatment was done.

All patients proforma was filled, which contained the basic details of the patient, detailed history and clinical examination. Informed consent was taken. Patients were examined three times during the study, before initiating treatment, 2<sup>nd</sup> day, 4<sup>th</sup> day and after 7 days. Pain score, tragal tenderness(TT), was assessed by using Wong Baker Faces Rating Scale(WBS) and ten point Numerical Rating Scale (NRS). The external auditory canal edema(EACE) was evaluated based visualization of the tympanic membrane(TM), given scores of 0,1, 2 and 3 respectively. Patients were divided into four group, group A, group B, group C, group D. Group A patients were treated with acetic acid drops(2%) -3 drops for 4 times a day on ear. Group B patients were treated with steroid plus antibiotic drops (Ciprofloxacin 0.3% with Dexamethasone 0.1%). Group C patients were treated with Ichthammol glycerine pack. Group D patients were treated with steroid plus antibiotic pack (Qualiderma ointment -beclomethasone dipropionate 0.025%, neomycin sulphate 0.5%, miconazole nitrate 2%) on the affected ear. All groups were prescribed same analgesics. Statistics was analyzed using Chi-Square Test, Fischer Exact Test and Anova test.

## RESULTS

A total of 160 patients was analyzed. Mean age of the patients in group A was 26, group B was 27, group C was 25.5 and group D was 25 and were comparable (p value 0.97)

Total number of males were 83 and females were 77 and were comparable (p value 0.97)

The affected ear was right in 87 patients and left was 73 in patients and were comparable (p value 0.96)

The pain score mean for on day 1 all groups were 9.7

The pain score mean for on day 2 in Group A was 8.4, Group B was 7.4, Group C was 4.6, Group D was 4.2.

The pain score mean for on day 4 in Group A was 7, Group B was 5.1, Group C was 2.6, Group D was 1.8 .

The pain score mean for on day 7 in Group A was 4.7, Group B was 3.1, Group C was 0.3, Group D was 0.

Data collected was analyzed by ANOVA test and significant p value (<0.001) was noted.

Significant pain improvement was noted in Group D followed by Group C, followed by Group B and least in Group A.

## DISCUSSION

Significant difference in improvement based on symptoms and pain score were among the 4 groups. Best results were obtained with pack as opposed to drops. In packing maximum effectiveness was noted with steroid-antibiotic pack. In plain drops Steroid-antibiotic drops showed the maximum efficacy. Among the 4 treatment groups that

were assessed in our study, Steroid antibiotic pack was most efficacious, with acetic acid drops being the least. Studies comparing different antibiotics and steroid combinations have been done.<sup>9,10,11,12,13,14</sup> So our study will be done to compare the efficacy of pain reduction in different modalities of treatment of otitis externa. Our study showed results in accordance with study conducted by Frank A M van *et al.* which showed that the combination of antibiotic (ciprofloxacin) and corticosteroid is more effective than ciprofloxacin used alone.<sup>10</sup> A study conducted by M. Jamalullah, Atif Rafique, Raheel Ahmed;*et al.* from Department of ENT CMH, Rawalpindi from Jan 2007 to Jan 2008 to compare the efficacies of 10% Ichthammol glycerine and 3% Ciprofloxacin - 1% Dexamethasone by means of sustained release of drug by wick method in treatment of otitis externa 100 patients who met the inclusion criteria were included in study divided into two equal groups of 50 each by random sampling technique. The patients in group A were given 3% Ciprofloxacin - 1% Dexamethasone and patients in group B were given 10% Ichthammol glycerine wick. Both groups of patients were analyzed on third day for reduction in pain by Visual Analogue Scale (VAS) and visible reduction of edema by degree of opening of External Auditory Canal (EAC). It was observed that Out of 50 patients in group A 76 % (38) were males and 24 % (12) females. 66 % (33) patients in group B were males and 34 % (17) females. On third day in group A, 76 % (38) patients had marked reduction of pain whereas 14 % (7) had moderate and 10 % (5) had mild reduction. In group B, on third day 38% (19) patients had marked pain reduction, 30% (15) had moderate and 32% (16) had mild pain reduction. 86% (43) patients in group A had visible reduction of external canal edema as compared to 60% (30) patients in group B. The study concluded that 3% Ciprofloxacin - 1% Dexamethasone wick is more effective in treating patients of otitis externa as compared to 10% Ichthammol glycerine wick.<sup>15</sup> A study conducted by B. L. Shrestha, I. Shrestha, R. C. M. Amatya, A. Dhakal To compare the efficacy of treatment between steroid-antibiotic and 10% Ichthammol glycerine packs (IG packs) in acute otitis externa. A prospective, randomized clinical trial between steroid-antibiotic and 10% IG pack which was performed in department of ENT-HNS, Kathmandu University Hospital, Dhulikhel from July 2009 to December 2009 on 82 patients. Average number of visits in 10% IG pack group (n = 41) was 5.4 days (2-5 visits) while in steroid-antibiotic group (n = 41) it was 3.5 days (2-5 visits). There was statistically significant decrease in the number of visits in steroid group (P\0.05). Similarly, decrease in pain score in second visit was statistically significant (P = 0.02) in steroid-antibiotic group as compared to 10% IG pack, while the edema score in

second visit while comparing steroid– antibiotic group with 10% IG pack was statistically not significant ( $P = 0.07$ ), whereas it was statistically highly significant on fourth visit ( $P = 0.001$ ). Since the control of pain and edema is more and hence the number of visits is significantly less in steroid–antibiotic packing group, so it is worthwhile to use steroid–antibiotic pack for effective treatment of acute otitis externa.<sup>16</sup> Since the control of pain and edema is more and hence the number of visits is significantly less in steroid–antibiotic packing group, so it is worthwhile to use steroid–antibiotic pack for effective treatment of acute otitis externa.

## CONCLUSION

The study was aimed to find out the efficacy of Acetic acid drops, steroid plus antibiotic drops, Ichthammol glycerine pack and steroid plus antibiotic pack in treatment of acute otitis externa (AOE). The results of the study established a positive correlation between the parameters and thus proved that steroid plus antibiotic pack was more efficacious than Ichthammol glycerine (IG) pack and steroid plus antibiotic drops. The least efficacious was acetic acid drops (2%). In case of tragal tenderness (TT), outcome seen among the four groups showed steroid plus antibiotic pack is more efficacious than all other groups and was statistically significant on 2<sup>nd</sup> and 4<sup>th</sup> day. In case of edema, most efficacious in steroid plus antibiotic pack and least was noticed in acetic acid drops. Tragal tenderness (TT) and external auditory canal edema (EACE) is a good subjective tool to assess the symptomatology of patients with acute otitis externa (AOE).

## REFERENCES

1. Rachael Hornigold, Darren Gillett, Elina Kiverniti, Meredydd Harries; The management of otitis externa: a randomised controlled trial of a glycerol and ichthammol ribbon gauze versus topical antibiotic and steroid drops; *Eur Arch Otorhinolaryngol* (2008) 265:1192-1203.
2. Robert Sander M D, *Otitis Externa: A Practical Guide to Treatment and Prevention*, Milwaukee, Wisconsin, American Family Physician; www.aafp.org/afp volume 63, number 5/march 1, 2001
3. Halpern MT, Palmer CS, Seidlin M. Treatment patterns for otitis externa. *J Am Board Fam Pract* 1999; 12:1-7.
4. McCou SI, Zell ER, Besser RE. Antimicrobial prescribing for otitis externa in children. *Pediatr Infect Dis J* 2004; 23(2):181-3.
5. Rowlands S, Devalia H, Smith C, *et al*. Otitis externa in UK general practice: a survey using the UK General Practice Research Database. *Br J Gen Pract* 2001; 51(468):533-8.
6. Holten KB, Gick J (2001) Management of the patient with otitis externa. *J Fam Pract* 50(4):353–360 357–358
7. Ahmed K, Roberts ML, Mannion PT. Antimicrobial activity of glycerine–ichthammol in otitis externa. *Clinical Otolaryngology and Allied Sciences*. 1995; 20:201-3.
8. Nilssen E, Wormald PJ, Oliver S. Glycerol and ichthammol: medicinal solution or mythical potion. *J Laryngol and Otol*. 1996; 110:319-21.
9. Roland PS, Younis R, Wall GM. A comparison of ciprofloxacin/dexamethasone with neomycin/polymyxin/hydrocortisone for otitis externa pain. *Adv Ther* 2007
10. Frank van Balen FA, Smit WM, Zuithoff NP, Verheij TJ. Clinical efficacy of three common treatments in acute otitis externa in primary care: randomised controlled trial. *BMJ* 2003; 22:327 (7425):1201-5.
11. Davies S, de Guzman A. Ear drops containing steroids were better than acetic acid for otitis externa. *Evid Based Nurs* 2004; 7(2):43.
12. Rusenfeld RM, Singer M, Wasserman JM, Stinnett SS. Systematic review of topical antimicrobial therapy for acute otitis externa. *Otolaryngol Head Neck Surg* 2006; 134(4 Suppl):S24-48
13. Pond F, McCarty D, O'Leary S. Randomized trial on the treatment of oedematous acute otitis externa using ear wicks or ribbon gauze: clinical outcome and cost. *J Laryngol Otol* 2002; 116(6):415-9.
14. Jasdeep Monga<sup>1</sup>, Shweta Sharma<sup>2</sup>, Preeti Singh<sup>3</sup>, Vishal Pathania<sup>4</sup>. Efficacy of Ichthammol Glycerin Pack and Steroid Antibiotic Pack as Initial Treatment of Acute Otitis Externa: A Comparative Study. *JMSCR Volume 05 Issue 08 August 2017*
15. M. Jamalullah, Atif Rafique, Raheel Ahmed; *et al*. comparison of efficacies of 10% ichthammol glycerine and 3% ciprofloxacin - 1% dexamethasone by means of sustained release of drug by wick method in treatment of otitis extern. *ISRA MEDICAL JOURNAL*. Dec 2011; Volume 3; Issue 3:94-96.
16. B. L. Shrestha, I. Shrestha, R. C. M. Amatya, A. Dhakal, Effective Treatment of Acute Otitis Externa: a Comparison of Steroid Antibiotic Versus 10% Ichthammol Glycerine Pack; *Indian J Otolaryngol Head Neck Surg* (October–December 2010) 62(4):350–353.

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