



# Treatment of Acute Otitis Externa : Comparison of Steroid Antibiotic Versus 10% Ichthammol Glycerine Pack

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**Abstract:** To compare outcome of treatment between steroid-antibiotic and 10% Ichthammol glycerine packs (IG packs) in acute otitis externa. A prospective study between steroid-antibiotic and 10% IG pack which was performed in department of ENT, civil hospital jawalamukhi and civil hospital nagrota bhagwan from July 2019 to may 2020 on 32 patients was conducted. Age group among studied patients ranged from 14 to 56 years, with mean of 36.7 years. Out of which 20 (62.5%) were females and 12 (38.5%) were males. Pain assessed by Numerical Rating Scale (NRS) and edema was assessed by dividing the external auditory canal in two quadrant giving score of 50% for each on the day of presentation and subsequent visits till tragal sign and edema subsided. Average number of visits in 10% IG pack group ( $n = 16$ ) was 4.6 days (2-5 visits) while in steroid-antibiotic group ( $n = 16$ ) 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 significant in steroid antibiotic group as compared to 10% IG pack whereas it was statistically highly significant on third visit ( $P = 0.001$ ). Since the reduction of pain and edema is more in the steroid antibiotic group hence the total number of packing is significantly less in steroid-antibiotic group, so it could be recommended to use steroid-antibiotic pack for effective treatment of acute otitis externa.

**Index Terms** - Acute otitis externa · Numeric rating scale · Steroid-antibiotic pack · 10% Ichthammol glycerine pack

## I. INTRODUCTION

Acute Otitis externa is a generalized condition of the skin of the external auditory canal that is characterized by general edema and erythema. It may represent as diffuse or localized form of inflammation and erythema of external ear canal. It is the very common condition which is encountered in day to day outpatient services. Any cause which will disturbs the lipid/acid balance of the ear predispose external auditory canal to Otitis externa [1]. Edema which occurs due to inflammation is the main cause of distraction of blood supply to the periosteal lining of bony canal there by responsible for extreme pain in otitis externa [2]. So treatment includes not only antibiotics and analgesics systemically but also aural packing. It acts by its chemical ingredients and also mechanically by splinting action pressing the soft tissues towards the non-distended position. Traditionally the packs are impregnated with 10% Ichthammol glycerine. Ichthammol has antiseptic action while glycerine has its hygroscopic nature helps in reducing inflammation. [3, 4]. Steroid-antibiotic cream can serve both functions. Steroid mainly helps in reduction of edema due to its action on the capillary wall tone and antibiotic is responsible for control of infection. Different studies about comparison of different antibiotics and steroid combinations have been done. [5-10] Topical application of antibiotic and steroid combination is seen to be superior then alone application of steroid for symptomatic control of otitis externa. [11, 12] In this study we tried to assess the effectiveness of treatment for relieving pain and edema by comparing steroid-antibiotic with 10% Ichthammol glycerine.

## MATERIAL AND METHODS

Patients of all age group and both gender presenting in opd of civil hospital jawalamukhi and civil hospital nagrota bhagwan from July 2019 to May 2020 and diagnosed to have acute otitis externa after careful examination were included in the study. Total patients included in study which required aural packing during this period were 32. Those who had concomitant chronic suppurative otitis media tubotympanic type were not included in the study. Patients needing aural packing in cases of otitis externa were randomized and were packed with 10% IG Pack and steroid-antibiotic alternatively. For steroid-antibiotic combination, we use the CLOBEN GM, a combination of BECLMETHASONE DIPROPIONATE, NEOMYCIN SULPHATE. Before packing was carried out, pain was assessed. Since, all our patients were above 14 years of age, we used a ten point Numerical Rating Scale (NRS) and the score was given by the patient. Similarly for scoring of edema we divided the external auditory canal in TWO parts with 50% for each and scoring was performed as per the percentage of the involvement of canal by the same ENT surgeon. Patients with comorbid diabetes and other diseases were not

included. Score of pain and edema on first visit was recorded. To comply with therapeutic guidelines and to offer the patient a rescue medication we distributed the same systemic antibiotic (amoxycylav) and analgesic (diclofenac). Patients were called after 24 h for reassessment. On their next visits, patients were to come to hospital without taking morning dose of analgesic in order to prevent the scoring performed at that time was not influenced by analgesics. If tragal tenderness and canal swelling was present repacking was done and asked for follow up again after another 24 hours. Assessment and repacking was done every 24 hours till tragal tenderness disappeared and edema subsided completely. Statistical analysis was done by using “Z” test to compare mean of average number of pain score and number of visits in two different groups.

## RESULTS

The total number of patients included in the study was 32. Among them 20 (62.5%) were male and 12 (38.5%) were female (Table 1). The age group ranged from 10 to 60 years (mean = 23.5) as shown in Table 2. In 16 (50%) patients 10% IG packing was performed whereas in another 16 (50%) patients steroid-antibiotic pack was kept.

Table 1 Showing sex distribution of patients (n = 32)

Male	Female
20 (62.5%)	12(32.5%)

Table 2 Showing age distribution (n = 32)

Age	Total number of patients
14-24 Years	8 (25%)
24-34 Years	14 (43.7%)
34-44 Years	8 (25%)
44-54 Years	2(6.3%)

The average duration of pain among included patient was 2.55 days (1-7 days) on presentation. Eight (25%) patients had history of fever and malaise whereas another 14 (43.7%) patients had history of pain in movement of jaw. when analyzing the OPD follow up, In 10% ichthammol pack group, 1 (3.12%) patient was seen to have maximum number of seven visits whereas when analyzing the steroid-antibiotic group, the maximum number of visit was five done by 8 (50%) patients (Table 3) with no patient have to come for more then 5 times. Regarding the pain it was observed that there was a statistically significant decrease in pain in steroid-antibiotic group as compared to 10% Ichthammol glycerine group on second visit. The status of edema was compared and it was observed that , a statistically significant decrease in edema was seen on third visit in steroid-antibiotic group as compared to 10% Ichthammol glycerine group. The edema was completely subsided on fifth visit in steroid-antibiotic group whereas it was on sixth visit in 10% IG Pack .So, the average number of visits in 10% IG Pack was 4.6 days whereas in steroid- antibiotic pack it was 3.5 days and this difference was statistically significant Similarly in edema control, there was statistically significant difference between steroid-antibiotic as compared to 10% ichthammol glycerin.

## DISCUSSION

Acute otitis externa (AOE) is a common disease of external ear which is mostly caused by bacteria and triggered by moisture [13]. The dominating pathogens are *Staphylococcus aureus* and *Pseudomonas aeruginosa*, in about 10% of cases fungi mainly (*Aspergillus* sp.) are detected [14]. In otitis externa, the main aim of treatment is to control edema and pain. In our study for the treatment of AOE, we tried to compare the effectiveness of steroid-antibiotic versus 10% Ichthammol glycerin pack. The use of an ointment pack in place of ear drops in the management of otitis externa could be superior for two points. One is that the occlusive effect of an ointment will increase the humidity in the affected ear [15]. Secondly fewer hypersensitivity reactions will be seen in ointment packs due to no preservatives, which may lead to allergic reactions, whereas eardrops are often preserved. Drugs present in ear drops are ototoxic, if used for a prolonged period in perforated tympanic membrane as they can permeate to inner ear [16]. So, aural packing which is soaked with topical preparation of antibiotic steroid or other preparation could be used to decrease pain and edema in perforated ear drum cases. Ear drops will not be able to penetrate through a edematous ear canal, this problem can be overcome by the insertion of an ear wick [16]. So insertion of a wick is better therapy to treat otitis externa than to instill ear drops into the ear [17]. It has been seen that both the Gram positive and Gram negative bacteria could be the cause infection in external ear, so a broad spectrum antibiotic is required for the treatment of same. Higher concentrations of topical medication could be delivered by packing the ear canal then the instilling of ear drops [13, 14]. Thus, organisms which may be “resistant” to a particular antibiotic will be susceptible to the antibiotic when it is applied topically [16]. Many bacterial (including pseudomonas) and fungal species are killed by the acidified environment of the ear canal. So , topical medications which have an acidic pH have been used as a main stay of treatment for otitis externa [16]. Studies using drop also showed significant improvement with steroid and antibiotic combination when compared with only antibiotic drop. Whereas we performed the studies using same antibiotics (AMOXYCLAV 625MG) and analgesics (DICLOFENAC) in all included patients to avoid bias. Masood et al. [18] in a randomized control trial found statistically significant improvement in pain parameters when compared with 10% IG pack and steroid pack. Similarly a prospective study was performed by Horni- gold et al. [19] while using topical steroid ear drops with 10% IG pack and found out no statistical difference. Bhatt et al. [20] showed significant decrease in pain and number of visits in steroid-antibiotic group as compared to 10% ichthammol glycerine pack in concordance with our study. In our study, we found out

that there was complete reduction in pain on fifth day in the steroid– antibiotic group whereas in the 10% IG pack group it took more than five days to seven day for reduction of pain.

Table 3 Showing total number of visits till complete pain relief between two groups ( $n = 32$ )

Number of visits till complete pain relief(days)	2	3	4	5	6	7
10% IG pack (no) $n = 16$	1	3	3	2	6	1
Steroid-antibiotic pack(no) $n = 16$	2	5	5	4	0	0

Edema reduction was also compared in our study between steroid–antibiotic with 10% Ichthammol glycerin. We found that there was complete resolution of edema on the fifth day in the steroid–antibiotic group whereas it took six days for edema to subside in most of cases of 10% Ichthammol glycerin group, so less number of visits and early control of pain and edema was seen in steroid–antibiotic group. So in this study, we found out that there was significant reduction in pain, edema and reduction in number of visits in steroid–antibiotic group when compared to 10% ichthammol glycerine group which is similar to study performed by Masood et al. and Bhatta et al.[20]

## CONCLUSION

As seen the control of pain and edema is more in steroid antibiotic group hence the number of visits is also significantly less in steroid–antibiotic packing group, so it is better to use steroid–antibiotic pack for effective treatment of acute otitis externa when compared to IG 10% pack.

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