

EFFICACY OF 10% ICHTHAMMOL GLYCERINE PACK AND STEROID-ANTIBIOTIC PACK FOR RELIEVING PAIN IN ACUTE OTITIS EXTERNA. A COMPARATIVE STUDY

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ABSTRACT

Introduction

Otitis externa is a common painful condition presents with generalized infection of external auditory canal, typically reveals erythema and edema of the skin. Aural packing plays an important role in relieving the pain and edema. For packing either we impregnated with 10% Ichthammol glycerine or steroid-antibiotic ointment.

Objective

To compare the efficacy of 10% Ichthammol Glycerine pack with steroid-antibiotic ointment pack for relieving the pain in acute otitis externa.

Methodology

A prospective, non-randomized clinical trial was carried out in 94 patients at Birat Medical College and Teaching Hospital, Biratnagar, Nepal from February 2018 to July 2018. Patients diagnosed with acute otitis externa were included in this study, where 47 patients were treated with 10% IG pack and remaining 47 patients treated with a combination steroid-antibiotic ointment pack. Before aural packing was carried out, pain was assessed using visual analogue scale (VAS). Both groups of patients were evaluated after 48 hours for assessment of pain.

Results

The total number of patients included in this study was 94. Among them 41 (43.6%) were male and 53(56.4%) were female where male and female ratio was 1:1.29. Majority of the patients were below 40 years (83%). Treatment with steroid-antibiotic ointment pack had significant reduction in pain after 48 hours post treatment, none of them had severe pain, 4(8.5%) had moderate pain remaining and 43(91.4%) had only mild pain. Whereas in patients treated with 10% IG pack 1(2.1%) had severe pain, 14(29.7%) had moderate pain and 32(68%) had mild pain. There was statistically significant decrease in pain with steroid-antibiotic pack.

Conclusions

Both treatment modalities are effective but this study showed steroid-antibiotic ointment pack, the combined therapy is more effective than 10% IG pack for relieving the pain in acute otitis externa.

KEYWORDS

Acute otitis externa (AOE), steroid-antibiotic pack, 10% ichthammol glycerine (IG) pack



INTRODUCTION

Otitis externa is a very common condition presents with generalized infection of external auditory canal, typically reveals erythema and oedema of the skin. Characteristic symptoms include pain, itching, canal oedema, aural fullness and many patients have discharge. Tenderness with movement of the tragus or pinna is a classical finding.¹ The prevalence rate of otitis externa is 0.4 percent per year. Approximately 10 percent of the population is affected during their lifetime.² It is more common in adults but the condition does affect children and geriatric group too. Otitis externa may be acute or chronic considering the time duration. If it lasts less than six weeks, it is acute and if persists more than three months, is chronic.³ It is classified as localised and diffuse where diffuse otitis externa is predominantly common.

Acute otitis externa is commonly seen in hot and humid climate and can occur frequently in patients who are active swimmers. Therefore, it is also called swimmer's ear. The moisture from humidity or sweating compromises the protective barrier function of skin overlying external auditory canal and creates a favourable environment for pathogens. Acute otitis externa can occur from minor trauma while cleaning ear as canal skin is very thin which make a breach in the epithelial lining of skin that allows an infection to occur. Any condition that disturbs the protective lipid barrier and alters the acid-base (PH) balance of the ear will favour the growth of pathogens.⁴ Contributing factors like use of cotton buds and other foreign objects inside ear canal should be avoided as this can damage the sensitive skin of ear canal, and preventing water entry inside the canal while bathing and swimming by using ear plug.

The cerumen that is produced by sebaceous and apocrine glands is slightly acidic in nature that prevents pathogens growth. It also contains certain antimicrobial components such as lysozyme. Any decrement in cerumen predisposes infection or thickened cerumen fosters retention of water and debris. Acute otitis externa is caused primarily by bacterial infection, with the most common pathogens staphylococcus aureus and pseudomonas aeruginosa. In rare cases, it can be due to a fungal infection.⁵

The natural history of otitis externa includes self resolution in mild cases as the disrupted canal gets epithelialized. If the inflammation progress, then there will be pain, edema, otorrhoea, lymphadenopathy and sometimes soft tissue infection leading to perichondritis and cellulitis.

Use of alcohol and astringents as topical therapy for canal diseases was described about 3000 years ago.⁶ The most effective part of treatment is aural toileting. All the purulent material and desquamated debris should be thoroughly removed followed by canal packing to allow the penetration of antimicrobial therapy. Aural packing plays an important role in acute otitis externa along with antibiotic and analgesics systemically. Inflammation of external auditory canal disrupts the periosteal and perichondrial lining and stretches nerve fibres which causes severe pain.⁷ Aural

packing acts mechanically by splinting action to prevent nerve stretch. For packing either we impregnated with 10% IG or steroid-antibiotic ointment. Ichthammol has anti-inflammatory and antiseptic action and can slow down the growth of bacteria while dehydrating effect of glycerine reduces canal oedema ultimately relieving a pain. 10% IG solution has a specific antibacterial activity against staphylococci and streptococci.^{8,9} Steroid-antibiotic ointment also provide the same functions. Antibiotic controls infection and steroid reduces edema by its action over capillary wall tone.

The purpose of this study was to compare the effect of 10% IG pack with steroid antibiotic pack for relieving pain in acute otitis externa.

METHODOLOGY

A prospective, non-randomized clinical trial was carried out in 94 patient diagnosed with acute otitis externa who visited OPD of Otorhinolaryngology of Birat Medical College and Teaching Hospital, Biratnagar, Nepal from February 2018 to July 2018. All patients diagnosed with acute otitis externa and presented with complaints of severe earache (according to VAS score) and visible edema of external auditory canal over the age of 10 years and of either sex were enrolled in the study. Patients who lost follow up, bilateral otitis externa, periaural abscess secondary to acute otitis externa, any evidence of middle ear pathology, known case of diabetic and immunocompromised patients were excluded. In all patients proper evaluation was done taking detail history regarding the onset and nature of symptoms and prior issues with skin disorder. Thorough aural toileting was done in included patients by removing all purulent materials and desquamated debris. Patients who needed aural packing were categorised into group A and group B where the first Group A of 47 patients were treated with ribbon gauge pack soaked with steroid-antibiotic ointment (Mupirocin and Beclometasone) and remaining Group B of 47 patients were treated with 10% IG ribbon gauge pack. Following aural packing, patients were prescribed the same systemic antibiotic (Tablet cefadroxil 250\500mg for 7 days) and analgesics (Ibuprofen plus paracetamol for 2 days) and were asked to take aural precaution i.e Avoid insertion of cotton buds and foreign objects and preventing water entry inside the ear canal. Before aural packing was carried out, pain was assessed using visual analogue scale (VAS). It consists of a horizontal line with a length of 10cm. Each score has 10mm with total of 100mm. Pain scoring (0-4mm), (5-44mm), (45-74mm), (75-100mm) are considered to have no pain, mild, moderate and severe pain respectively.¹⁰ The scoring system was explained and patients were asked to make a point on the line that will represent his\her pain correctly. Score of pain on first visit was recorded. Both groups of patients were evaluated after 48 hours for assessment of pain on the basis of tragal tenderness by same VAS method. Pain after 48 hours was compared with pain of first visit.

This study therefore compared recovery outcomes in patients with acute otitis externa treated with 10% IG pack



and a combination of steroid-antibiotic ointment pack. Statistical analysis of all the collected data was carried out using statistical package for social sciences (SPSS) version 20.0. The p value less than 0.05 was considered statistically significant, less than 0.01 as highly significant and less than 0.001 as very highly significant.

RESULT

The total number of patients included in this study was 94. Highest proportion of patients were of age group 21-30 years (37.2%), followed by 31-40 years (24.5%), 10-20 years (21.3%), 41-50 years (10.6%), 51-60 years (4.2%) and 61-70 years (2.1%). Among them 41 (43.6%) were male and 53(56.4%) were female where male and female ratio was 1:1.29. Treatment with steroid-antibiotic ointment pack had significant reduction in pain after 48 hours, none of them had severe pain, 4(8.5%) had moderate pain and remaining 43(91.4%) had only mild pain. Whereas in patients treated with 10% IG pack 1(2.1%) had severe pain, 14(29.7%) had moderate pain and 32(68%) had mild pain. Our results was statistically significant with a P value <0.017 in Fischer exact test.

Table 1: Age wise distribution among study population with acute otitis externa

Age group	Number of patients	Percent
10-20 years	20	21.3
21-30 years	35	37.2
31-40 years	23	24.5
41-50 years	10	10.6
51-60 years	4	4.2
61-70 years	2	2.1

Table 2: Gender distribution among study population with acute otitis externa

	Number of patients	Percent
Male	41	43.6
Female	53	56.4

Table 3: Showing the reduction of pain following the treatment with combined steroid antibiotic ointment pack (Group A) and 10% ichthammol glycerine pack (Group B) in patients with acute otitis externa after 48 hours

	Results		
	Mild pain	Moderate pain	Severe pain
(Group A) Responding after steroids and antibiotic packing	43(91.49%)	4(8.51%)	0(0%)
(Group B) Responding after 10% ichthammol glycerine packing	32(68.08%)	14(29.79%)	1(2.13%)
P – Value		<0.017	

DISCUSSION

Acute otitis externa is a painful condition which is encountered in a day to day out patient services. The primary treatment of acute otitis externa is to control pain, removal of discharge and debris from ear canal and use of topical

medication. Acute otitis externa is caused by bacteria with the most common pathogens staphylococcus aureus and pseudomonas aeruginosa and it can also be due to a fungal infection in about 10% of cases. However, a wide variety of aerobic and anaerobic bacteria have been isolated.^{5,11}

Different topical antibiotics and steroid has been used as initial treatment in acute otitis externa.^{12,13,14,15} Some advocate single therapy while others used in combination. But many studies suggest combination of topical steroid-antibiotic therapy superior than steroid alone.^{16,17}

Topical antibiotic preparation when applied locally has higher concentration than systemic antibiotics, so there is least chance of resistant to the pathogens. Topical antibiotic may be available as ointment, cream, drops, or solution. Ear drops are potentially ototoxic if used in perforated tympanic membrane for a longer period.¹⁸ Therefore ear pack is advisable to be used over the edematous ear canal rather than ear drops to decrease canal edema and facilitate topical medication delivery. Comparatively, hypersensitivity reactions are also less in ointment ear pack than ear drops. Ear pack also has its own demerits, as it increases the humidity of affected ear. Use of medication for aural packing is variable. Some prefer glycerol with ichthammol, antibiotic ointment/cream or antibiotic combined with steroid. Topical preparation along with steroid reduces inflammation, edema and pain. Most packing should be used for 24 to 48 hours and replaced until canal patency is maintained.

Our study showed acute otitis externa more in female than male with incidence of 1.29 times higher. The result of our study substantiate with the study done by BL Shrestha et al where he also observed incidence higher in female.¹⁹ Jamalullah M et al has male incidence higher than female.²⁰ However, the study of Gercek et al showed no hormonal influences in the pathology of acute otitis externa, thus showing no gender correlation.²¹ Neher A et al observed acute otitis externa more common in middle to old age group where as in our study it is more common in young adults group.²² However, R. Bhatta study showed similar results to that of our study.²³

Masood A et al compared the efficacy of steroid ointment pack with 10% IG pack in the initial treatment of severe acute otitis externa. Both modalities were efficacious and statistically steroid ointment pack group showed improvement in pain parameters.²⁴ Our study also showed steroid antibiotic pack better than 10% IG pack in pain improvement.

A prospective randomised study conducted by Jasdeep Monga comparing steroid antibiotic pack and 10% IG pack in treatment of acute otitis externa, showed similar effect in both group in the mean pain score and the edema of external auditory canal. Still they recommended 10% IG pack as better option as it is more cost effective and no risk of antibiotic resistance.²⁵ Hornigold R. et al in their randomised controlled trial found no significant difference between steroid-antibiotic drops and IG pack in terms of pain relief and canal edema. They recommended use of IG pack due to less cost and patient compliance.²⁶



Another similar study has been done by Adhikari using 10% IG pack and steroid-antibiotic ointment pack in children. It showed statistically significant decrease in number of visits in steroid antibiotic group.²⁷ Jamalullah M et al also showed significant reduction in pain on third day in steroid-antibiotic pack group than in 10% IG pack group. R. Batta and BL Shrestha have done similar study and showed earlier relief of pain in steroid-antibiotic ointment pack group than 10% IG pack group thus reducing hospital visits. The result of both of these study was similar to our study where treatment with steroid-antibiotic pack had significant reduction in pain after 48 hours. In steroid-antibiotic group none of them had severe pain, 8.5% had moderate pain remaining and 91.4% had only mild pain, whereas in patients treated with 10% IG pack 2.1% had severe pain, 29.7% had moderate pain and 68% had mild pain. In our study, response seems to be better with combined steroid-antibiotic ointment pack and was statistically significant.

CONCLUSION

Both steroid-antibiotic ointment pack and 10% IG pack are effective. But this study showed a combination of steroid-

antibiotic ointment pack is more effective than 10% IG for relieving pain in acute otitis externa.

RECOMMENDATIONS

The study recommends the combination therapy of steroid antibiotic ointment pack can be the effective treatment for relieving pain in acute otitis externa.

LIMITATION OF THE STUDY

None

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CONFLICT OF INTEREST

None

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