



A Comparative Study between outcome of 25% glucose in glycerin and submucosal human placental extract injection in the management of Primary Atrophic Rhinitis

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ABSTRACT

Background

Atrophic rhinitis is a chronic disease of the nose. Progressive atrophy of nasal mucosa and underlying turbinates, formation of scanty viscid secretion and crusts causing foul odor are the cardinal features of this disease. Treatment can be conservative as well as surgical. This study aimed to compare the outcome of 25% glucose in glycerin solution and Sub-mucosal human placental extract injection in the management of primary atrophic rhinitis.

Methodology

This study was conducted at Tripura Medical College and Dr. BRAM Teaching Hospital, Tripura, India, from January 2024 to June 2024 with a sample size of 10 after satisfying inclusion and exclusion criteria. Patients who had been diagnosed with primary atrophic rhinitis were divided into 2 groups, i.e., Group A and Group B. Group A was administered submucosal human placental extract injection, once a week for 6 months and Group B was advised 25% glucose in glycerin nasal drop, 10 drops in each nostril twice daily for 6 months following which the response of both the groups was recorded. Collected data was analyzed using Microsoft Excel and SPSS 25.0 software.

Results

Group A (submucosal human placental extract injection) had shown 60% good response while Group B (25% glucose in glycerin nasal drop) had shown 40% good response after 6 months of treatment. Fair response was equal in both the groups. Group A had shown 33% poor response while Group B had shown 67% poor response after 6 months. Out of a total of 10 patients, irrespective of groups, 50% of the patients had shown good response after 6 months of treatment, combining both the modalities. 20% of patients had shown fair response and the rest of 30% had shown poor response.

Conclusion

There are various modalities of treatment of primary atrophic rhinitis both surgical and conservative. Treatment with 25 % glucose in glycerin solution as well as submucosal human placental extract injection both had shown promising outcomes in various studies. But submucosal placental extract injection had shown better outcome than 25% glucose in glycerin solution in this study.

Keywords: Atrophic rhinitis, submucosal human placental extract, glucose in glycerin nasal drop.

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INTRODUCTION

Atrophic rhinitis is a chronic disease of the nose. Progressive atrophy of nasal mucosa and underlying turbinates, formation of scanty viscid secretion and crusts causing foul odor (Ozaena) are the cardinal features of this disease.^[1] Atrophic rhinitis is classified into two types- primary and secondary atrophic rhinitis. Though the age group varies, it is unlikely before puberty. Female predominance has been noticed as the disease has been found to be associated with estrogen deficiency (during puberty and menopause). Prevalence is more in tropical countries and mostly seen in people belonging to low socio- economic status ^[2]. Organisms like *Klebsiella ozaenae* (most common), *Coccobacillus foetidus*, *Diphtheroids*, *Bacillus mucous*, *Haemophilus influenzae* are also found to be associated with atrophic rhinitis. Secondary atrophic rhinitis can be caused secondary to long standing purulent sinusitis, Tuberculosis, syphilis or Leprosy, conditions like Rhinoscleroma, iatrogenic causes like radical turbinectomy, extensive nasal surgeries and Post radiotherapy patients. In atrophic rhinitis, the respiratory epithelium of the nasal cavity undergoes metaplasia from ciliated columnar to squamous epithelium. Chronic inflammatory infiltrates, granulation tissue formation and fibrosis occur in the submucosal area. Cilia are destroyed and there is a decrease in number and size of mucous glands.^[3] Symptoms include Nasal obstruction despite a roomy nasal cavity because of the lack of Eddy current formation. Greenish yellow discharge with crust is formed which bleeds on removal. Offensive smell (fedor) and merciful anosmia are also seen in this disease ^[4]. Investigations include diagnostic nasal endoscopy, Culture and Sensitivity of nasal discharge, computed tomography which may show atrophy of turbinates, erosion and bowing of lateral wall of nose, resorption of bulla ethmoidalis and uncinata process. Treatment can be conservative as well as surgical. Conservative methods include crust removal followed by alkaline nasal douching which contains sodium baborate (28.4 g), sodium bicarbonate (28.4 g) and sodium chloride (56.7 g). Alkaline douching loosens the crusts and prevents its formation. It also acts as an antiseptic solution and maintains the pH which promotes restoration of mucosa. 25% glucose in glycerin nasal drop is widely

used which acts by inhibiting the growth of proteolytic organisms and promoting the growth of commensal flora. Glycerin also acts as a hygroscopic agent which moistens the nasal mucosa ^[5]. Submucosal human placental extract injection can also be used which acts by causing mechanical narrowing of the nasal passage as progesterone leads to hyperplasia of mucosa and estrogen stimulates metabolic process. Placental serum also boosts up immunity and causes vasodilatation which leads to healing of the atrophied nasal mucosa ^[6]. Previous studies had also shown promising outcomes with topical uses of honey ^[7] and oral rifampicin ^[8] therapy in cases of primary atrophic rhinitis. Surgical modalities include procedures like Young's and modified Young's operation ^[9], Lautenslager's operation, Wilson's operation, Vestibuloplasty etc. The present study was conducted to compare the outcome of management of primary atrophic rhinitis with 25% glucose in glycerin solution nasal drops and Sub-mucosal human placental extract injection in nasal mucosa.

MATERIALS AND METHODS

This study was conducted at Tripura Medical College and Dr. BRAM Teaching Hospital in the year 2024. Patients who presented with signs and symptoms of Atrophic Rhinitis and who provided informed and written consent were selected for the study after considering the inclusion and exclusion criteria. A total of 10 patients were studied in a six months' time duration. All the cases were interviewed in a prerecorded Performa and data were collected regarding their age, sex, address, occupation, any other significant past and personal history. Symptoms like nasal blockage, anosmia, discharge, epistaxis or any other complaints were recorded. The patients had also undergone thorough clinical examination. Diagnostic nasal endoscopy and computed tomography were also conducted. The patients were treated by dividing them into two groups of 5 patients each, namely Group A and Group B. All the patients had undergone endoscopic crust removal before initiating the treatment and during follow up visits followed by Alkaline nasal douching which was also common for each group. But Group A was specifically treated with 10 drops of

25% glucose in glycerin solution twice daily after alkaline douching and Group B was treated with submucosal placental extract injection once a week for 6 months along with alkaline nasal douching twice daily. All the patients were asked for first follow up after 15 days and then once in a month for 6 months. During these visits, examination and crust removal if any was done for all the patients followed by submucosal placental extract injection in patients belonging to Group A. At the same visits, response of treatment was also recorded for all the patients. The responses were recorded as good response, fair response and poor response depending on the improvement of sign and symptoms and findings on examination. The following scale as described by Killera S *et al*^[7] was used in this study for recording the response.

Good response:

Marked improvement in symptoms.
No crust formation and fetor.
Pink and healthy nasal mucosa.

Fair response:

Partial relief from symptoms.
Reduction in crust formation.

Poor response:

No relief from symptoms.

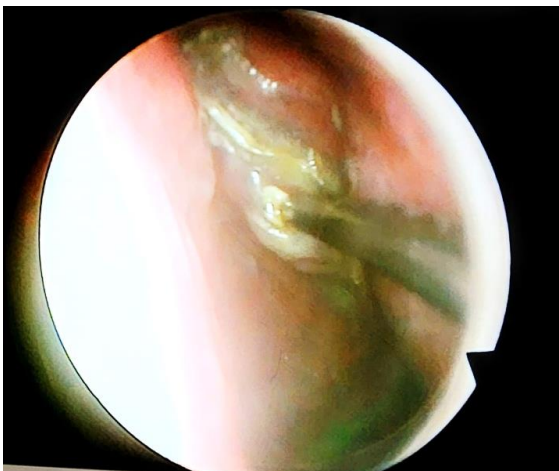


Figure 1. Endoscopic picture showing crust formation which is being cleared

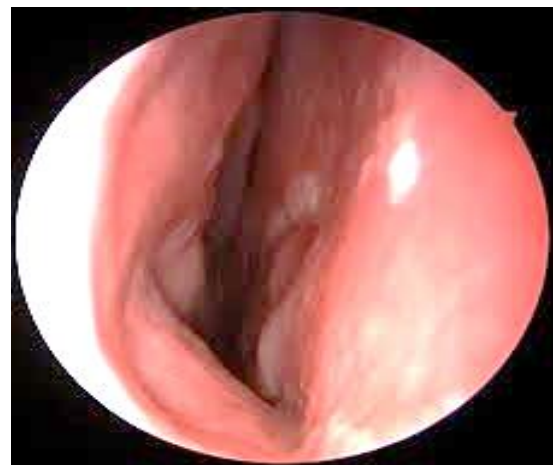


Figure 2. Healthy mucosa after 6 months of treatment



STATISTICAL ANALYSIS

All of the patients were divided into two groups, i.e., Group A and Group B. Analysis was done with Microsoft excel and SPSS 25.0 software. The data had been expressed as frequency percentage.

RESULTS

In our study, out of 10 patients, 100 % were having nasal blockage, 80% were complaining of Anosmia, 40% were complaining of foul smell and 30 % were complaining of nasal discharge. 70% were complaining of crusting. 40% were complaining of headache. Epistaxis was present in 20% of cases. Fever was present in 10% cases. Diagnostic nasal endoscopy revealed crusting in 100% of cases. 60% of patients had greenish crusts entirely covering bilateral nasal cavities. Pale mucosa was noticed in

80% of cases. 70% of cases had bleeding on crust removal. Submucosal human placental extract injection was given in Group A which had shown 60% good response after 6 months followed by a fair response of 20% and poor response among the rest of 20% cases among patients in Group A. In group B, 25 % glucose in glycerin solution was used. 40% had shown good response, 20% had shown fair response and rest 40% had shown poor response among patients in Group B. Comparing both the groups, Group A had shown 60% good response while Group B had shown 40% good response after 6 months (Chart. 1). Fair response was equal in both the groups (Chart 2). Group A had shown 33% poor response while Group B had shown 67% poor response (Chart 3).

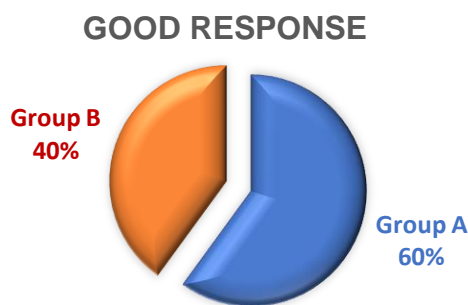


Chart 1. Good response: Group A vs Group B after 6 months

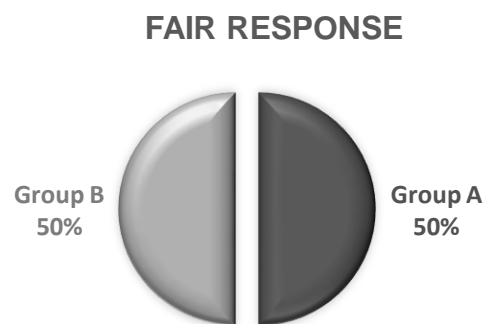


Chart 2. Fair response: Group A vs Group B after 6 months

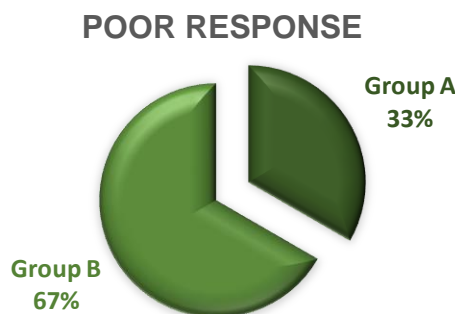


Chart 3. Poor response: Group A vs Group B after 6 months



Out of a total of 10 patients, irrespective of groups, 50% of the patients had shown good response after 6 months of treatment, 20% of patients had shown

fair response and rest of 30% had shown poor response (Table 1).

Table 1. Response of both the groups recorded after 6 months

Response	Group A	Group B	Total
Good	3	2	5
Fair	1	1	2
Poor	1	2	3
Total patients	5	5	10

DISCUSSION

Atrophic rhinitis is a chronic inflammation of the nose which has been known since the time of ancient Egypt and was also prevalent in ancient Greek and Indian civilizations. Factors like occupational exposure, infective causes, iatrogenic causes, female preponderance, immunocompromised status, poor socio-economic status are found to be the predisposing factors for causing this disease. There are a variety of symptoms related to this disease but the most significant triad to diagnose this disease comprises fetor, greenish crusts and roomy nasal cavity. Patients in the present study presented with nasal blockage (100%), anosmia (80%), foul smell (40%), nasal discharge (30%), crusting (70%), headache (40%), epistaxis (20%), fever (10%). On the contrary, Killera S *et al*^[7] in their study, found that patients were having symptoms of foul smell (95%); nasal discharge (60%); nasal obstruction (100%); anosmia (62%); headache (53%); and epistaxis (25%). Examination revealed crusting in 100% of cases and 60% cases had greenish crust filling both the nasal cavity entirely. On the contrary, Killera S *et al*^[7] found that 89% of the patients had

greenish crusts filling the entire nasal cavities bilaterally. The mainstay of treatment in our study was conservative by removal of crusts on regular follow up and alkaline nasal douching in 100% of the patients. Then a group was advised 25% glucose in glycerin and the other group was administered submucosal placental extract. In our study, 40% had shown good response with 25% glucose in glycerin solution whereas Killera S *et al*^[7] found 50% good response with the same treatment. They also found that honey had shown better results than 25% glucose in glycerin solution. In our study submucosal human extract injection had shown better results on the contrary Jaswal A *et al*^[8] had found better results with oral rifampicin compared to submucosal placental extract injection. In our study, 60% of patients achieved good response after 6 months of treatment with submucosal placental extract therapy whereas Dutt S N *et al*^[5] achieved 93.3% good response by the same treatment, though they continued the treatment for 2 years. In our study, 25% glucose in glycerin solution was prepared in front of the study group and was demonstrated about how to instill the drops in



bilateral nasal cavities at home. So, in this case, patient compliance played an important role where there were instances of patients missing doses or not purchasing the materials after exhausting the solution as most of them belonged to rural areas. Similar challenge of poor compliance of 25% glucose in glycerin solution among patients was also found by Killera S *et al*^[7] in their study. Whereas, the other group were injected with human placental extract in the hospital setup by the treating surgeon. Hence, there was no such compliance issue faced using this treatment modality.

CONCLUSION

Atrophic Rhinitis is a chronic inflammation of the nose found mainly in rural areas among people belonging to poor socio-economic status. Treatment comprises both conservative and surgical. Treatment with 25 % glucose in glycerin solution as well as submucosal human placental extract injection both had shown promising outcomes in various studies. But submucosal placental extract injection had shown better outcome than 25% glucose in glycerin in our study. The latter had also shown compliance issues among patients.



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