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Comparative study of different topical therapies for chronic rhinosinusitis

Abstract

Objective: To evaluate efficacy of different topical therapies in patients with CRS based on SNOT 20 questionnare.

Design & duration: Prospective observational comparative study from February 2018 to May 2018.

Setting: District Hospital Pulwama. A secondary care referral hospital in South Kashmir.

Results and conclusion: A total of 80 patients were enrolled in this study and placed in four groups of 20 patients each in Groups A,B,C,D. SNOT-20 questionnaire was basis of symptomatology before and after the intended topical therapy for 8 weeks and objective outcome by diagnostic nasal endoscopy before start and again at culmination of therapy. It was observed that maximum SNOT -20 change was in Group A and B which involved topical therapy of normal saline and nasal steroid.

Keywords: chronic rhinosinusitis, topical therapies, SNOT-20, quality of life

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Introduction

Chronic rhinosinusitis (CRS) is a common disorder with a marked impact on the quality of life and health burden.[1] It effects 5 to 15% of population.[2] Medical treatment should be considered the cornerstone of disease treatment of CRS, with sinus surgery reserved for medical failures or patients' complications. Short and long-term antibiotic therapy, topical and systemic steroids, topical and oral decongestants, oral antihistamines, mast cell stabilisers, antileukotriene agents, mucolytics, topical antibiotics, topical and systemic antimycotics, proton pump inhibitors, bacterial lysates, immunotherapy, phytotherapy and avoidance of environmental factors have all been used in the management of chronic rhinosinusitis.[3]All these topical therapies aim at reducing mucosal inflammation ,reducing bacterial burden and improving mucociliary clearance. Advantages of topical medical therapy include direct delivery onto diseased tissue, potential for delivering higher local drug concentrations, and minimizing systemic absorption however the disadvantages include epistaxis, patient discomfort, variable absorption and factors like deviated nasal septum and hypertrophied turbinates which impair efficient topical drug delivery to the target mucosa.

The focus of this article is to compare the various modalities of topical therapies for patients with CRS with evaluation of SNOT 20 scores and diagnostic nasal endoscopy at start and 8 weeks after continuous treatment.

Materials and methods

Eighty (80) adult patients with two or more symptoms of CRS for a period of 12 weeks or more were included in this study. Symptoms included mucopurulent nasal discharge, nasal congestion, facial pressure or pain, sneezing, decreased sense of smell or ear fullness.

Patients with nasal polyposis, Impacted DNS touching lateral wall of nose, severely hypertrophied nasal turbinates were exluded. However patients with mild DNS which could not impede topical delivery of drugs were included in the study.

Patients were randomly distributed into four (4) groups of twenty patients each as:

1. Group A: Patients were advised to irrigate their nasal cavities with high pressure of 50 ml normal saline through a one way delivery bottle three times a day.
2. Group B: Patients were advised to use two puffs of intra nasal Fluticasone furaote every morning.
3. Group C: Patients were advised to irrigate their nasal cavities with a solution of baby shampoo in plain water (1:20) at high pressure three times a day.
4. Group D: Patients were advised to irrigate their nasal cavities with freshly prepared Neomycin solution made by mixing one tablespoon full of neomycin powder in 20 ml of plain water three times a day.

Results

The primary outcome measure of this study was to see improvement in rhinosinusitis related quality of life measured by SNOT-20 questionnaire at 8 weeks of continuous topical medical therapy.

Eighty patients with two or more symptoms of CRS over a period of 12 weeks were included in this study. They were randomly placed in four groups of twenty patients each.

Complete baseline data for four groups is in Table 1. Data from pre and post treatment SNOT 20 score is given in Table 2.

Table 1 Complete baseline data for four groups

	Group A	Group B	Group C	Group D
n= 80	20	20	20	20
Males	8(40%)	13(65%)	6(30%)	10(50%)
Females	12(60%)	7(35%)	14(70%)	10(50%)
Diagnostic Nasal endoscopy				
Polyps	0	0	0	0
DNS(not impacted)	6(30%)	4(20%)	2(10%)	8(40%)
Purulent discharge	Pre treatment 8(40%) Post treatment 2(10%)	Pre treatment 11(55%) Post treatment 4(20%)	Pre treatment 6(30%) Post treatment 4(20%)	Pre treatment 3(15%) Post treatment 0
Boggy mucosa	Pre treatment 12(60%) Post treatment 6(30%)	Pre treatment 14(70%) Post treatment 2(10%)	Pre treatment 12(60%) Post treatment 7(35%)	Pre treatment 10(50%) Post treatment 6(30%)

Table 2 Data from pre and post treatment SNOT 20 score

	Group A	Group B	Group C	Group D
Pre treatment SNOT 20 score(average)	41.3	39.8	40.4	42.6
Post treatment SNOT 20 score(average)	26.5	24.7	28.8	31.1
SNOT 20 Change	14.8	15.1	11.6	11.5

Discussion

This is one of the first studies to our knowledge comparing outcome of four different topical medications on patients with CRS. There are studies comparing nasal saline irrigations with nasal saline sprays[4] and there are many descriptive studies about role of nasal steroid sprays[5] in CRS and studies on baby shampoos[6] on symptomatic improvement in patients of CRS. Several recent studies on steroid eluting stents in patients with CRS have come in literature. This was the reason that this study was done in Government District Hospital Pulwama after requisite ethical board clearance. The study was done over a period of 4 months from February 2018 to May 2018. All patients were informed about the study and were enrolled after signing a consent form. Initially 100 patients were enrolled however 12 patients didn't follow up to the period of 8 weeks and 8 patients developed some side effects like epistaxis and discomfort due to irrigations and hence were excluded.

The baseline severity of nasal and sinus symptoms of the subjects enrolled in this study and the magnitude of symptom improvement achieved with different topical modalities was assessed by using SNOT 20 questionnarre. A diagnostic nasal endoscopy of all patients with note of purulent discharge, mucosal oedema, and turbinate hypertrophy was also done before and after culmination of 8 weeks of continuous treatment.

In this study maximum SNOT 20 score change was observed in Group B and closed followed by Group A. These results are comparable to study done by Freidman Micheal[7] and colleagues who compared steroid with saline irrigations and hypertonic saline irrigation. In view of the anti inflammatory property of nasal steroids there is marginal better scores on SNOT 20 questionnare as compared to normal saline irrigations. However the difference is not statistically significant.

Group C and Group D have similar SNOT 20 scores after 8 weeks of treatment and their efficacy as a single modality of topical therapy does not fare as good as the first two groups. However the sample size is not big enough to generalize the outcome. Study done by Alaxender C Chiu and colleagues[8] on efficacy of baby shampoo on patients post FESS for CRS has shown encouraging results. Fifty percent patients had improvement in their SNOT 20 scores who were symptomatic after Functional sinus surgery. Topical antibiotics are not first-line therapy for CRS. Stronger evidence exists for its use in patients with cystic fibrosis. Topical antibiotics have emerged as adjunctive treatment of CRS because they offer the potential for higher local concentration at the desired target site with minimization of systemic side effects.[9] Evidences exist that long term macrolide therapy improve subjective and objective outcomes in patients with CRS.[10,11] Skyes[12] and colleagues in their study found symptomatic improvement in patients who used topical neomycin as compared to placebo.

Conclusion

In my short term study, topical treatment with nasal steroid sprays and normal saline were found to be more effective as compared to topical baby shampoo and neomycin in terms of reduction of symptom score in patients with CRS. This observed improvement in symptoms correlated with nasal endoscopy findings in patients who used normal saline irrigations and steroid sprays.

Acknowledgments

None.

Conflict of interest

The author declares there is no conflict of interest.

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