

## “Saline Nasal Irrigation Adjunct Therapy in Allergic Rhinitis”

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### Abstract

**Objective:** This study was done to determine whether nasal saline irrigation improved the symptoms and signs of allergic rhinitis (AR) and whether nasal saline irrigation could be used as a complementary management of AR.

**Method:** 30 participants with AR were divided into two groups, Control group

and Test group. Symptoms and signs of AR were evaluated, at the beginning of the study and after 2 weeks.

**Results:** In AR participants treated with nasal irrigation (Test group) a significant improvement in symptoms and signs was observed, and a significant decrease in the mean rhinitis score.

**Conclusion:** Nasal saline irrigation can be viewed as an adjunctive therapy for AR

**Key Words :** Saline nasal irrigation, Allergic rhinitis.

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### I. Introduction

Allergic Rhinitis and its Impact on Asthma (ARIA) 2008, allergic rhinitis is defined clinically by nasal hypersensitivity symptoms induced by immunologically mediated inflammation of nasal mucous membrane after exposure to offending allergen.<sup>1</sup>

Common allergens which causes the allergic rhinitis are house dust mites, pollens, animal dander and fungi, vegetable proteins, enzymes and chemicals.<sup>2</sup>

Symptoms of allergic rhinitis are nasal obstruction, sneezing, rhinorrhoea which may be anterior as nasal discharge and posterior as postnasal drip, nasal itching. The primary non-pharmacological treatment for allergic rhinitis includes avoidance of the offending allergens in the patients which plays a vital role along with pharmacotherapy and immunotherapy.<sup>1</sup>

Pharmacotherapy for allergic rhinitis includes antihistamines, intranasal corticosteroid sprays and anti-leukotrienes. Intranasal corticosteroids are effective medications for the management of allergic rhinitis and are able to deliver high concentrations of drugs to the target organ.

Saline nasal irrigation can be used for variety of conditions. They have been used in the management of acute & chronic rhinosinusitis, allergic and non-allergic rhinitis, septal perforations, nonspecific nasal symptoms (including postnasal drip) and in postoperative care of nasal surgical patients. The use of a simple and inexpensive nonpharmacologic form of therapy, saline nasal irrigation in the management not only reduces the symptomology but also reduces the frequency of using medications.

They are, however, associated with side effects such as crusting and bleeding, and cannot target multiple organs in patients with comorbid diseases such as asthma or the ocular symptoms that may accompany allergic rhinitis.

Additionally, first generation oral antihistamines are associated with significant sedative side effects and have not been shown to be as cost-effective as second-generation antihistamines. Lastly, leukotriene receptor antagonists are also commonly used; they have efficacy equal to that of oral antihistamines but are more expensive and remain inferior to intranasal glucocorticoids.

In light of this, nonpharmacologic therapy approaches are of great importance. One such approach is nasal irrigation using saline solutions, which in international guidelines and reviews is recommended as complementary treatment of AR without its efficacy ever having been established conclusively.<sup>3</sup>

Nasal saline irrigation is a natural remedy and recent Cochrane reviews evaluated its efficacy as a potential treatment or adjunct to pharmacological treatment.<sup>4</sup>

Hence the aim of this study was to evaluate the response of nasal irrigation with saline (0.9%) in patients with allergic rhinitis and determine efficacy of saline nasal irrigation as adjunct therapy in allergic rhinitis.

## II. Methods

In this interventional analytical longitudinal study, patients of age  $\geq 18$  years  $\leq 50$  years of either sex diagnosed with allergic rhinitis in ENT opd willing to participate in the study were included and they were assigned in to Test group and Control group by concealment method of randomization, after sample collection, i.e.15 participants in Test group and 15 participants in Control group, and participants are allowed to choose single envelope at the beginning of the study . Test group were be asked to do 0.9% normal saline nasal douching twice daily in addition to steroid nasal spray ( Fluticasone) and antihistamine ( Bilastine 20mg ) tablet for a duration of 2 weeks while the control group will receive only steroid nasal spray and anti histamine tablet for duration of 2 weeks. At the beginning of the study period rhinitis score was assessed in all participants of the study of both groups and again rhinitis score was re assessed at the end of 2 weeks of study.

The scores for evaluating symptoms and signs of AR (adopted from Mion et al.7)

Symptoms	Signs
Sneezing/itching 0 = Absent 1 = 1–4 per day/occasional pruritus 2 = 5–10 per day/sporadic pruritus over 30 min 3 = 11+/interferes with sleep and/or concentration	Color of nasal turbinates 0 = Normal, pink 1 = Hyperemic or pale 2 = Red 3 = Blue
Rhinorrhea 0 = Absent 1 = Cleaning the nose 1–4 times a day 2 = Cleaning the nose 5–10 times a day 3 = Constant cleaning	Nasal secretions 0 = Absent 1 = Humid mucosae 2 = Visible secretion on the turbinates or nasal floor 3 = Large amount of secretion
Nasal congestion 0 = Absent 1 = Little, does not cause disturbance 2 = Oral breathing most of the day 3 = Does not breathe through the nose/interferes with sleep, olfaction, or voice	Swelling of turbinates 0 = Absent 1 = Turbinate hypertrophy with little nasal blockage 2 = Nasal congestion with nasal blockage 3 = Nasal congestion with total nasal blockage, limiting nasal breathing
Postnasal drip 0 = Absent 1 = Sensation 2 = Frequent clearing of the throat 3 = Cough and impairing talk	Retropharyngeal inflammation 0 = Absent 1 = Small hyperemia of pharyngeal mucosa 2 = Visible granules in oropharynx 3 = Visible secretion in oropharynx posterior wall

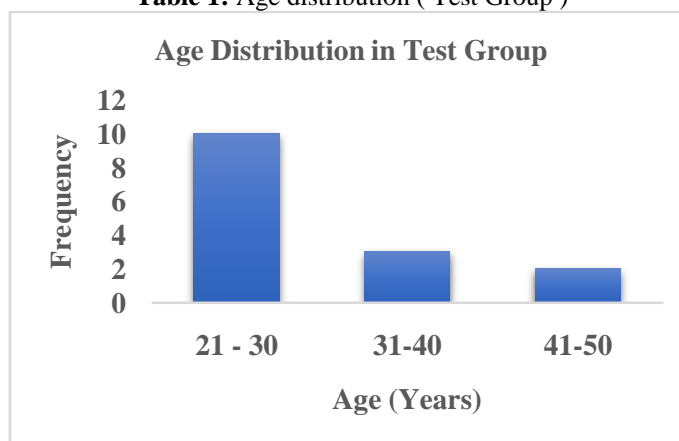
## STATISTICAL ANALYSIS

Data was analyzed with t – test and chi square test.

## III. Results

Age ( Years )	Frequency
21 - 30	10
31-40	3
41- 50	2

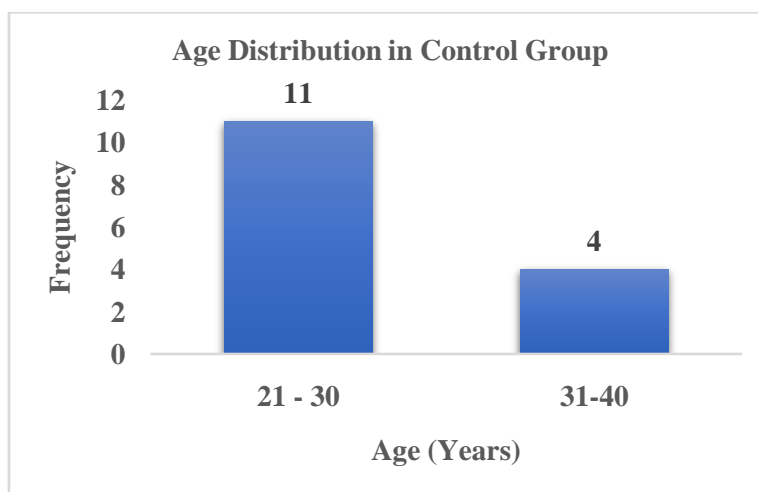
**Table 1:** Age distribution ( Test Group )



**Figure: 1**

**Table2 :Age distribution ( Control Group )**

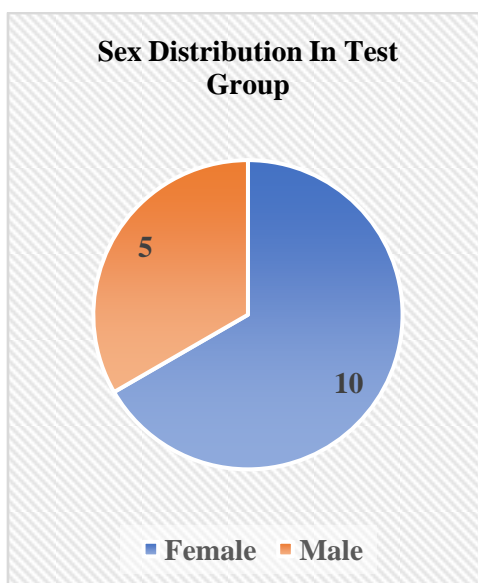
AGE ( YEARS )	Frequency
21 – 30	11
31 – 40	4



**Figure :2**

**Table3: Sex distribution ( Test Group )**

SEX	FREQUENCY
FEMALES	10
MALES	5



**Figure: 3**

**Table 4 : Sex distribution ( Control group )**

SEX	FREQUENCY
FEMALES	11
MALES	4

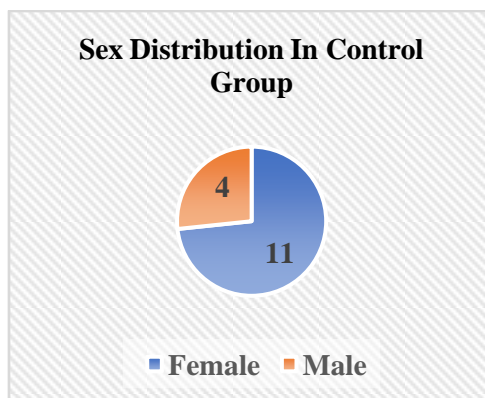


Figure: 4

Nasal irrigation with saline was well accepted in all patients and no adverse effect was reported. A significant improvement of symptoms and signs was reported in all patients after 2 weeks, Compared with Control group the Test group showed , significant differences in total scores of symptoms and signs.

The mean rhinitis score in the control group and Test group at the beginning of the study was 14 and 17 respectively.

After 2 weeks of treatment mean rhinitis score in Control group and Test group was 8 and 5 respectively. Standard mean deviation in control group and Test group at the beginning of study was 2.12 and 31.30 respectively and after 2 weeks standard deviation was 1.58 ( Control group ) and 1.64 ( Test Group ). ‘t’-test value for Test group was 3.897 and for Control group was 0.944.

Table 5 : Study Results

VARIABLE	MEAN RHINITIS SCORE ( AT THE BEGINNING OF STUDY)	MEAN RHINITIS SCORE ( AFTER 2 WEEKS )	t test value	STANDARD MEAN DEVIATION
CONTROL GROUP	14	8	0.944	1.58
TEST GROUP	17	5	3.897	1.64

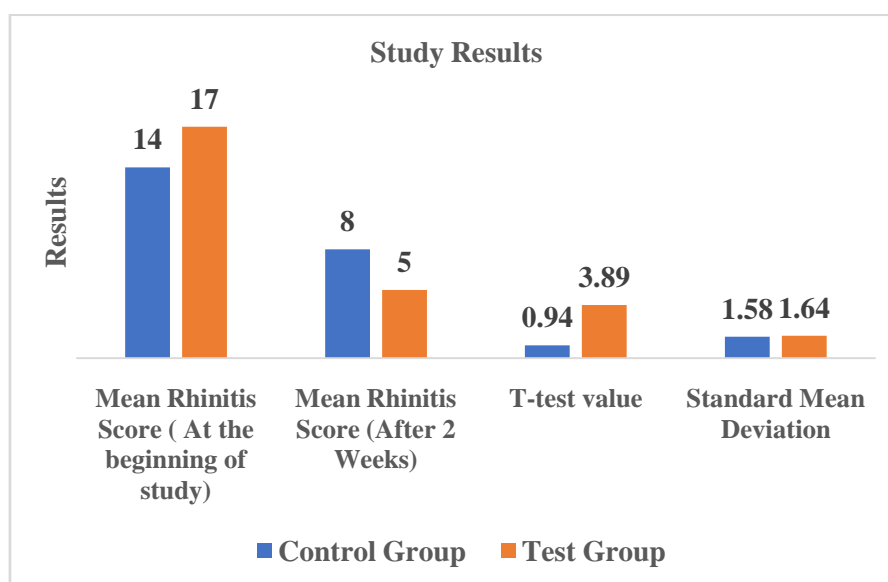


Figure: 5

#### IV. Discussion

Our study has provided evidence that nasal saline irrigation is effective in controlling AR in combination with steroid nasal spray and antihistamine.

Some authors have previously reported that nasal washing is effective in the treatment of seasonal AR in adults and in children<sup>5,7</sup>. The results of our study are consistent with these previous reports. The exact mechanism by which nasal irrigations work remains controversial. It is likely associated with the removal of

nasal secretions, or improvement of MCC, or a combination of the two effects<sup>8</sup>. Furthermore, nasal irrigation may work by removing the inflammatory mediators such as histamine, prostaglandins, and leukotrienes contained in nasal mucus<sup>9</sup>.

In a Study done by Garavello et al.<sup>5</sup> found that the mean daily rhinitis score was reduced and a decreased consumption of oral antihistamines was observed in children with seasonal AR after being treated with hypersaline nasal irrigation.

In a prospective, randomized study published in 2009, Li et al.<sup>6</sup> treated 26 children (aged 8–15 years) with AR in three groups over a period of 12 weeks either only with SNI in group 1, or a combination of SNI and steroids in group 2 or only with steroids in group 3. A solution of 500 mL of normal saline (0.9% sodium chloride) was used twice a day for nasal irrigation. The symptom score fell by 19% in group 1 and 30% in group 2. MCT was accelerated by 37% in group 1 and 53% in group 2.

In the previous studies various concentration of saline were used but no clear evidence exists as to which saline solution is best. Although it seems to be controversial, both hypertonic and isotonic nasal irrigations have been shown to improve sinonasal symptoms effectively. In this regard, we speculate that nasal irrigations work predominantly by clearing mucus to decrease both mucosal edema and inflammatory mediator concentration. In our study, we have used 500 ml of 0.9% normal saline for nasal irrigation for its convenience and simplicity and in our experience it was found to be effective for AR patients.

## V. Conclusion

Nasal saline irrigation in combination with steroid nasal spray and antihistamine tablet than Steroid nasal spray and anti-histamine tablet is effective in controlling AR. Based on our findings, we suggest that nasal saline irrigation in combination with steroid nasal spray and antihistamine tablet should be viewed as a good adjunctive treatment option for the relief of AR, since it is effective, inexpensive, can be performed at home, has fewer side effects, and causes less economic burden.

**Abbreviations :** AR – Allergic rhinitis.

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