Nasal irrigation as an adjunctive treatment in allergic rhinitis: A systematic review and meta-analysis

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ABSTRACT

Background: *Saline nasal irrigation (SNI) is often recommended as additional nonpharmacologic treatment, having proven its efficacy in acute and chronic rhinosinusitis and for therapy after sinonasal surgery. To date, however, no systematic review or meta-analysis exists showing the influence of SNI on allergic rhinitis (AR). This study aimed to establish the impact of SNI on symptoms of AR in different patient groups.*

Methods: *We conducted a systematic search of Medline, Embase, Cochrane Central Register of Controlled Trials, and ISI Web of Science databases for literature published from 1994 to 2010 on SNI in AR. Prospective, randomized, controlled trials that assessed the effects of SNI on four different outcome parameters were included. The evaluation focused on primary (symptom score) and secondary parameters (medicine consumption, mucociliary clearance, and quality of life).*

Results: *Three independent reviewers chose 10 originals that satisfied the inclusion criteria (>400 participants total) from 50 relevant trials. SNI performed regularly over a limited period of up to 7 weeks was observed to have a positive effect on all investigated outcome parameters in adults and children with AR. SNI produced a 27.66% improvement in nasal symptoms, a 62.1% reduction in medicine consumption, a 31.19% acceleration of mucociliary clearance time, and a 27.88% improvement in quality of life.*

Conclusion: *SNI using isotonic solution can be recommended as complementary therapy in AR. It is well tolerated, inexpensive, easy to use, and there is no evidence showing that regular, daily SNI adversely affects the patient's health or causes unexpected side effects.*

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Allergic rhinitis (AR) is a global health problem. The prevalence of AR is increasing in areas with low and medium levels of frequency and may be plateauing or even decreasing in high prevalence regions.[1] It ranges up to 40% for seasonal AR (SAR) and up to 13% for perennial AR.[1–3] Medical spending to treat AR almost doubled from $6.1 billion in 2000 to $11.2 billion in 2005.[4] Mean annual out-of-pocket expenses related to AR were $520/person in 2005.[4] AR affects social life, sleep, school, and work, making treatment imperative. The management of AR encompasses patient education on avoidance of allergens as well as the use of pharmacotherapy and allergen-specific immunotherapy.[1] The administration of intranasal glucocorticosteroids is the most effective pharmacologic treatment in AR.[5] A pronounced fear of cortisone, however, exists among patients and prescribing physicians.[6] The majority of patients with AR has not been treated adequately and, most notably, not according to current guidelines.[7]

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.[1,2,5–7]

The objective of the present study, therefore, was to verify the effectiveness of nasal irrigation in AR based on the criteria of evidence-based medicine. To this purpose, a systematic literature analysis and a meta-analysis of relevant publications were conducted.

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MATERIALS AND METHODS

A search for the literature intended for this review was performed using the comprehensive databases MEDLINE (Medical Literature Analysis and Retrieval System Online), CENTRAL (Cochrane Central Register of Controlled Trials), EMBASE (Excerpta Medica Database), and Web Of Science (ISI Web of Knowledge).

The systematic search for relevant original articles was based on the topic areas "allergic rhinitis," "nasal irrigation," and "treatment." The corresponding key words (allergic rhinitis, saline irrigation, intranasal lavage, saline solutions, nasal douche, nasal rinsing, nasal saline, nasal saline wash, treatment, saline treatment, and alternative treatment) were used in the search in alternating combinations and linked *via* the operators "AND" and "OR." The defined limitations only allowed for randomized, controlled studies. No restrictions were made in terms of period of publication and study duration. Furthermore, only studies published in English and German and only those having human subjects of investigation were incorporated in the search. Additional literature was found while reviewing the reference lists of selected articles and, particularly, reviews. After excluding duplicate articles, 50 clinical studies remained in which their titles harmonized with the defined topic. Another 40 studies were excluded based on the information about study design, subjects, intervention/application, control group, outcome parameters, and diagnosis. Decisions about exclusions were made by two independent reviewers (KH, RM). Any discrepancies were discussed by three of the authors (KH, RW, RM). Only articles that fulfilled the following criteria were included:

Study design—Prospective studies having at least evidence level IIa (German Cochrane Center—Cochrane Classification).[8]

Study content—Local, nasal applications with saline solution for treating seasonal or perennial AR.

Subjects—Adults, pregnant women and children as patients. Confirmation of diagnosis by means of positive patient history or allergy testing using skin tests (prick test) or blood tests (*e.g.*, radioallergosorbent test).

Intervention—Nasal irrigation in liquid or nebulized form.