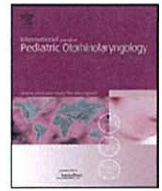




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# Efficacy of nasal irrigation in the treatment of acute sinusitis in children

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### ABSTRACT

**Background:** Nasal irrigation has been used as an adjunctive therapy of sinonasal disease including acute/chronic sinusitis and allergic rhinitis. Several published articles reported it also improves clinical sinus symptoms.

**Objective:** To evaluate the effectiveness of normal saline nasal irrigation in the management of acute sinusitis in children.

**Design:** This was a randomized, prospective placebo-controlled study.

**Methods:** We included 69 participants with acute sinusitis. 30 of 69 participants underwent normal saline nasal irrigation. 39 of 69 participants were not receiving nasal irrigation. All participants performed nasal peak expiratory flow rate (nPEFR) test, nasal smear examination, radiography (Water's projection) and requested to complete the Pediatric Rhinoconjunctivitis Quality of Life Questionnaires (PRQLQ) at the baseline visit. All participants were requested to record the symptom diary card every day and were followed-up every 1 week during this period. A physical examination, nasal smear and nPEFR were performed at each visit, and all daily diary cards collected. At the final visit, the symptoms diaries were reviewed and participants were requested to complete the PRQLQ again. The nPEFR, radiography (Water's projection) and nasal smear were also repeated.

**Results:** Normal saline irrigation group significantly improved mean PRQLQ values and nPEFR values at medium ( $T = 2.816$ ,  $P < 0.05$ ) and final period ( $T = 2.767$ ,  $P < 0.05$ ) compared with the other group. Although there were no statically significant improving rate of radiography (Water's projection) in among two groups ( $T = 0.545$ ,  $P > 0.05$ ), but normal saline irrigation group was better than the other group. The improval rate of mean TSS in the irrigation group significantly improved all symptoms compared with the placebo group, in which rhinorrhea, nasal congestion, throat itching, cough and sleep quality improved. 27 of 66 (40.9%) participants with atopy, 16 of 27 (53.33%) participants underwent normal saline irrigation. Normal saline irrigation atopy group significantly improved rhinorrhea, nasal congestion, throat itching and sleep quality symptoms compared with non-irrigation atopy group. Normal saline irrigation atopy group significantly improved nPEFR values at final period ( $Z = 2.53$ ,  $P < 0.05$ ).

**Conclusion:** This study evidence that normal saline nasal irrigation improves Pediatric Rhinoconjunctivitis Quality of Life and decreases acute sinusitis symptoms. Nasal irrigation is an effective adjunctive treatment for pediatric acute sinusitis. Normal saline nasal irrigation in atopy children also improves allergic-related symptoms. We may need larger, longer and extended study to assess the conclusion.

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## 1. Introduction

Sinusitis in children is a very common condition. Children average six to eight colds per year with 0.5–5% developing acute

sinus infection [1]. The main causes of symptoms associated with rhinosinusitis in children are cough (during day or night, but generally worse at night), rhinorrhea, nasal obstruction, mouth breathing, hyponasal speech and snoring. The rhinorrhea can be purulent but may be clear, minimal, or absent with severe congestion [2]. Compliants of facial pain and headache are rare but may be present in children age 8 and older [2,3]. A clinical practice guideline for the management of sinusitis was recently published by the American Academy of Pediatrics (AAP), Subcommittee on Management of Sinusitis and Committee on Quality Improvement [4,5]. The following definitions were proposed: acute rhinosinusitis is defined as an infection of the paranasal sinuses lasting less than 30 days and often presenting as upper respiratory infections

**Abbreviations:** NS, normal saline; PRQLQ, Pediatric Rhinoconjunctivitis Quality of Life Questionnaire; nPEFR, nasal peak expiratory flow rate; TSS, total symptom score; AR, allergic rhinitis; AD, atopic dermatitis; AS, asthma.

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