



Safety and Efficacy of Once-Daily Nasal Irrigation for the Treatment of Pediatric Chronic Rhinosinusitis

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Objectives/Hypothesis: To compare efficacy and outcome of daily saline irrigation versus saline/gentamicin for treating chronic rhinosinusitis (CRS).

Study Design: Prospective, randomized, double-blinded study.

Methods: Forty children diagnosed with CRS were enrolled. Patients were randomized to once-daily irrigation with saline or saline/gentamicin for 6 weeks. Treatment outcomes were measured using 1) Lund-Mackay scoring system of pre- and post-treatment computer tomography (CT); and 2) Sinonasal Quality-of-Life Survey (SN-5) completed at baseline, and after 3 weeks and 6 weeks of irrigation.

Results: Thirty-four patients completed the study and follow-up. There were statistically significant improvements in quality-of-life (QoL) scores after 3 weeks of irrigation within both groups. However, there were no statistically significant differences in the SN-5 scores between the two treatment groups after 3 and 6 week ($P = .067$). CT scores for each sinus and total scores were reduced for both groups after 6 weeks, and the differences in scores were statistically significant within each group after treatment, but there were no differences between the two treatment groups. Only one patient required functional endoscopic sinus surgery due to persistent symptoms. Compliance was over 90% for once daily irrigation over the 6 week treatment period.

Conclusions: Once-daily intranasal irrigation for 6 weeks is safe and equally effective in the treatment of pediatric CRS using saline or saline plus gentamicin, and QoL was significantly improved after 3 weeks of irrigation in both groups. High tolerance, compliance, and effectiveness of irrigation support its use as a first-line treatment for pediatric CRS before considering surgical intervention.

Key Words: Nasal irrigation, saline irrigation, pediatric rhinosinusitis, outcome studies, quality of life.

Level of Evidence: 1b

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INTRODUCTION

Acute and chronic sinusitis are common clinical problems with significant morbidity affecting the quality of life (QoL) for both pediatric and adult populations. From 1985 to 1992, sinusitis was the fifth most common diagnosis for which antibiotics were prescribed, and the number of chronic sinusitis cases in 1994 in the United States was estimated at 35 million.¹ Along with upper respiratory tract infections, rhinosinusitis and allergic rhinitis are among the most common reasons cited for work absenteeism and need for physician visits.² Direct

medical costs for treatment of sinusitis alone is estimated at \$2.4 billion annually and is reported to affect 15% of the population.² In the pediatric population, rhinosinusitis is a common concern, resulting frequently in the overuse of systemic oral antibiotic therapy. Children typically experience an estimated six to eight upper respiratory illnesses per year, usually viral, and only 13% are estimated to result in true sinusitis. True acute and chronic sinusitis, if not adequately treated, may result in long-term symptoms, including nasal airway obstruction, nasal congestion, persistent mucopurulent rhinorrhea, daytime and nocturnal cough, headaches, daytime fatigue, and even exacerbation of poorly controlled underlying asthma.

Most research studies that evaluate the medical and surgical treatments for chronic sinusitis are in adult patients. Many of these studies evaluate the efficacy of nasal irrigation for the alleviation of sinonasal symptoms.^{2–6} Chronic and acute rhinosinusitis can negatively affect the QoL of children and their caretakers because of days of missed school and frequency physician visits. The multiple courses of systemic oral antibiotics may have associated side effects, negatively affect QoL, are costly, and may lead to the development of resistant organisms. Intranasal saline irrigation is underutilized in the pediatric population, most likely due to the

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