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Xylitol Nasal Irrigation in the Management of Chronic Rhinosinusitis: A Pilot Study

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Objectives/Hypothesis: To determine the tolerability of xylitol mixed with water as a nasal irrigant and to evaluate whether xylitol nasal irrigation results in symptomatic improvement of subjects with chronic rhinosinusitis.

Study Design: A prospective, randomized, double-blinded, controlled crossover pilot study.

Methods: Twenty subjects were instructed to perform sequential 10-day courses of daily xylitol and saline irrigations in a randomized fashion, with a 3-day washout irrigation rest period at the start of each treatment arm. Collected data included patient characteristics, along with Sino-Nasal Outcome Test 20 (SNOT-20) and Visual Analog Scale (VAS) scores reported at the beginning and end of each irrigation course.

Results: Fifteen of the 20 subjects (75%) returned their SNOT-20 and VAS data for analysis. There was a significant reduction in SNOT-20 score during the xylitol phase of irrigation (mean drop of 2.43 points) as compared to the saline phase (mean increase of 3.93 points), indicating improved sinonasal symptoms ($P = .0437$). There was no difference in VAS scores. No patient stopped performing the irrigations owing to intolerance of the xylitol, although its sweet taste was not preferred by three subjects (21%). One patient reported transient stinging with xylitol.

Conclusions: Xylitol in water is a well-tolerated agent for sinonasal irrigation. In the short term, xylitol irrigations result in greater improvement of symptoms of chronic rhinosinusitis as compared to saline irrigation.

Key Words: Xylitol, saline, chronic rhinosinusitis, nasal irrigation, SNOT-20.

Level of Evidence: 1b.

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INTRODUCTION

Xylitol is a five-carbon sugar alcohol that has gained relative prominence in the past decade as a naturally occurring antibacterial agent. It is generally not believed to possess its own antibacterial properties; rather it appears to enhance the body's own innate bactericidal mechanisms.[1,2]

Based on these findings, we sought to explore the therapeutic potential of xylitol irrigations in treating chronic rhinosinusitis, a condition that has been estimated to affect nearly 14% of the population, with significant associated quality-of-life impairment.[3,4] Saline irrigation, which has been shown to be beneficial for patients with rhinosinusitis,[5] served as an accepted standard treatment for comparison. We conducted a prospective, randomized, crossover study to compare the therapeutic value of saline versus xylitol irrigations in patients with chronic rhinosinusitis.

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MATERIALS AND METHODS

Study Design

This study was a prospective, randomized, double-blinded, controlled crossover pilot study. Recruitment was done through a tertiary sinus specialty clinic, with all subjects enrolled between April and May 2010.

Before commencement of this study, institutional review board approval was obtained for the protocol, and all patients gave their written informed consent.

Patients

Eligible subjects were adults with chronic rhinosinusitis who had undergone bilateral endoscopic sinus surgery to include at a minimum maxillary antrostomy and anterior ethmoidectomy. Sinus patency was confirmed endoscopically to ensure adequate exposure to the irrigation solutions. Subjects were excluded if they had a history of immunocompromise, cystic fibrosis (CF), primary ciliary dyskinesia, active smoking, treatment with antifungal medications, an active bacterial infection requiring antibiotics, history of head and neck irradiation, active pregnancy, or granulomatous disease. Subjects who were taking other ancillary sinus medications, such as nasal steroids and antihistamines, were eligible as long as they maintained regular use throughout the study period.

Materials

Xylitol. Pharmaceutical-grade xylitol (Acros Organics, Fair Lawn, NJ) was premeasured and packaged in the hospital pharmacy into unlabeled, sealed packets each containing 12 mg of the sugar. Subjects were given 10 of these packets and instructed to dissolve the contents of one packet in 240 mL of