

Saline irrigation spells relief for sinusitis sufferers

Encourage patients with chronic rhinosinusitis to try this simple approach

Practice changer

Recommend nasal irrigation to patients with chronic rhinosinusitis. Large-volume, low-pressure saline irrigation decreases the severity and frequency of symptoms.¹

Strength of recommendation

B: Single well-done randomized controlled trial (RCT)

Pynnonen MA, Mukerji SS, Kim HM, et al. Nasal saline for chronic sinonasal symptoms: a randomized controlled trial. *Arch Otolaryngol Head Neck Surg.* 2007;133:1115-1120.

ILLUSTRATIVE CASE

A 45-year-old woman presents to your office with an 8-month history of nasal congestion and thick nasal discharge. Her symptoms have waxed and waned, the patient reports. She's tried decongestants, antibiotics, and nasal steroids, with limited success. The patient has not had a recent respiratory infection, has never had sinus surgery, and does not want to be on long-term medication. You wonder if there's an alternative treatment you can offer.

Rhinosinusitis is one of the most common conditions seen by primary care physicians in the United States, and its incidence and

prevalence are increasing.^{2,3} While acute rhinosinusitis is usually self-limiting and resolves within a month, some patients develop chronic—and hard to treat—sinonasal symptoms.

■ No single cause, no definitive treatment

We've moved away from the notion that chronic rhinosinusitis is always a manifestation of persistent bacterial infection, and now recognize that there's an inflammatory, nonbacterial component.⁴ In any given patient, several mechanisms—acting either simultaneously or independently—may contribute to sinonasal symptoms.³

Chronic sinusitis is treated in a variety of ways, including medications, immunotherapy, and surgery. Despite their limited efficacy, antibiotics and nasal steroids have been the mainstays of treatment.⁵ Treating underlying allergies, when they exist, may be helpful. But regardless of which treatment patients receive for chronic rhinosinusitis, many remain symptomatic.⁶

Benefits of saline irrigation extend beyond postop care

Otolaryngologists recommend saline irrigation after sinus surgery to clear secretions, debris, and crusts; reduce the risk of postoperative mucosal adhesions; and

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INSTANT POLL

How likely are you to begin recommending large-volume, low-pressure saline irrigation for patients with chronic nasal congestion or discharge?

- Extremely likely
- Likely
- Unlikely
- Extremely unlikely
- I already do

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expedite mucosal healing.^{7,8} Saline irrigation is also gaining popularity as an alternative approach to chronic sinusitis symptom relief, and several randomized controlled trials (RCTs) have demonstrated both objective and subjective efficacy of this treatment for sinonasal disease.⁸⁻¹¹

In 2007, the Cochrane Collaboration reviewed evidence for the effectiveness of nasal saline irrigation for symptoms of chronic rhinosinusitis. The reviewers concluded that it is well tolerated and beneficial, whether used alone or as an adjunctive treatment.¹²

Nasal saline sprays are often recommended because they're thought to be better tolerated than other delivery modes.¹³ There have, however, been no comparisons of the relative efficacy of different means of saline delivery, until now.

STUDY SUMMARY

■ Nasal irrigation and spray go head-to-head

This study was a high-quality, prospective RCT comparing nasal spray and nasal irrigation.¹ Subjects were recruited from the general population. To be eligible, participants had to be 18 years of age or older and have reported at least one of the following chronic rhinosinusitis symptoms on 4 or more days each week in the preceding 2 weeks:

- nasal stuffiness
- nasal dryness or crusting
- nasal congestion
- thick or discolored nasal discharge.

In addition, the symptoms must have been present on at least 15 of the preceding 30 days. Exclusion criteria included recent sinus surgery, a respiratory infection within the past 2 weeks, and the use of nasal saline within the past month.

Researchers enrolled 127 patients in the study; 63 were randomized to the nasal spray group and 64 to the large-volume, low-pressure irrigation group. Demographic and baseline characteristics of the groups were similar. The average ages of those in the irrigation and spray groups were 45 and 48 years, respectively.

Most patients were nonsmokers and had been symptomatic for 7 to 12 months.

Twice-daily treatment. Researchers asked the patients to perform the assigned treatment twice daily for 8 weeks, but the patients were also permitted to continue using their usual medications. Symptom severity and disease-specific quality of life were assessed with the Sino-Nasal Outcome Test (SNOT-20), a 20-item survey that measures physical problems, emotional consequences, and functional limitations of sinusitis.¹⁴

The SNOT-20 is a validated, self-administered survey that asks patients to score items such as runny nose, postnasal discharge, need to blow the nose, reduced productivity, and embarrassment, on a 0- to 5-point scale (0=never, 5=always). A SNOT-20 score of 100 indicates the worst possible symptoms.

As a measure of chronicity of symptoms, patients were also asked to estimate how many months they'd had these symptoms during the last year. In addition, they were instructed to keep a diary to document treatment compliance and the use of other medications for sinonasal symptoms.

To measure outcomes, the researchers provided patients with mail-in packets so they could send in their completed SNOT-20 questionnaire and the medication diary completed at 2, 4, and 8 weeks after randomization.

Biggest improvements seen in irrigation group

Severity of symptoms. In each outcome measurement period, the saline irrigation group had lower SNOT-20 scores than the nasal spray group. At 2 weeks, the irrigation group scores were 4.4 points lower than the spray group ($P=.02$); at 4 weeks, the scores were 8.2 points lower ($P<.001$), and at 8 weeks the scores were 6.4 points lower ($P=.002$). Those in the irrigation group also had a significantly greater change from baseline than the patients in the spray group at 4 weeks (16.2 vs 7.4, $P=.002$) and at 8 weeks (15.0 vs 8.5,

FAST TRACK

Antibiotics and nasal steroids—mainstays of treatment for chronic sinusitis—have limited efficacy

PURLs methodology

This study was selected and evaluated using FPIN's Priority Updates from the Research Literature (PURL) Surveillance System methodology. The criteria and findings leading to the selection of this study as a PURL can be accessed at www.jfponline.com/purls.

$P=.04$). The difference was marginally significant at 2 weeks (12.2 vs 6.7, $P=.05$).

Frequency of symptoms. At 8 weeks, 40% of the irrigation group and 61% of the nasal spray group reported nasal or sinus symptoms “often or always.” The absolute risk reduction in symptom frequency with saline irrigations, therefore, was 0.21; 95% confidence interval, 0.02-0.38 ($P=.01$). The odds of frequent nasal symptoms were 50% lower in the irrigation group compared to the spray group.

WHAT'S NEW

■ One delivery method is better than another

Prior studies had proven the effectiveness of nasal saline for reduction of rhinosinusitis symptoms. This RCT demonstrated that large-volume, low-pressure nasal irrigation brings greater symptom relief than nasal spray.

The researchers found little difference between the 2 groups in the rate of adverse effects, and reported that nasal irrigation appears to be well accepted once patients become accustomed to it. The fact that the participants were recruited from the general population further suggests that the results will be generalizable to primary care patients.

CAVEATS

■ High dropout rate in irrigation group

The absence of a control group prevents us from knowing the effect of saline nasal spray or irrigation compared with no treatment. In prior studies, however, nasal saline spray was found to be more effective than placebo in reducing rhinosinusitis symptoms.^{8,15}

It is notable that a significant portion (21%) of the irrigation group abandoned this treatment by 8 weeks; in comparison, just 7% of the nasal spray group discontinued treatment.

This lower rate of adherence makes the beneficial effects of the irrigation group even more impressive. But it also suggests that a significant portion of pa-

PATIENT HANDOUT

Saline nasal irrigation

Your step-by-step guide



STEP 1: GATHER THE SUPPLIES

- Salt (kosher, canning, or pickling salt)
- Baking soda
- Nasal irrigation pot (available at most pharmacies)
- Measuring spoons
- Container with lid

OR

- An irrigation kit that includes the device and premixed saline packets

STEP 2: PREPARE THE SOLUTION

- Put 1 tsp salt and ½ tsp baking soda into the container.
- Add 1 pint of lukewarm tap water.
- Mix contents.
- Fill the nasal pot.

STEP 3: POSITION YOUR HEAD

- Lean over the sink; rotate your head to one side.
- Insert the spout of the irrigation device into the uppermost nostril.
- Breathe through your mouth.
- Raise the handle of the nasal pot so the solution flows into the upper nostril; in a few moments, the solution will begin to drain from the lower nostril.
- Continue until the pot is empty, then exhale gently through both nostrils and gently blow your nose.
- Refill the nasal pot, turn your head to the opposite side, and repeat with the other nostril.
- Do this twice a day or as directed.

STEP 4: CLEAN AND PUT AWAY THE EQUIPMENT

- Wash the nasal pot daily with warm water and dish detergent; rinse thoroughly.
- Store unused saline solution in the sealed container; it can be kept at room temperature and reused for 2 days.

Adapted from: University of Wisconsin Department of Family Medicine.¹⁷

tients are unlikely to stay with this recommended regimen. For those who try saline irrigation and choose not to continue it or are unwilling even to try it, saline spray is a reasonable alternative.

It should be noted that financial support for this study was provided by NeilMed Pharmaceuticals, a manufacturer of nasal saline solution and irrigation devices. However, the sponsor was not involved in the design or conduct of the study, in data collection or analysis, or in the preparation of the manuscript.

CHALLENGES TO IMPLEMENTATION

■ Tx may “scare away” some patients

Despite its effectiveness in reducing rhinosinusitis symptoms, performing large-volume, low-pressure nasal saline irrigation is not intuitive—and may sound downright scary to some patients. The need to learn how to perform nasal irrigation effectively, overcome the fear of water in the nasal cavity, and find the time to perform irrigation regularly can be barriers to this treatment.

A little bit of coaching can go a long way

A study by Rabago et al¹⁶ found that coached practice and patient education are effective tools in mastery of the technique (PATIENT HANDOUT).^{10,17} The researchers also found that several home strategies—incorporating nasal irrigation into the daily hygiene routine, placing the materials in a convenient location, and using warm water—facilitate regular use.

There is evidence, too, that patients who successfully use large-volume, low-pressure saline irrigation gain more than symptom relief. Rabago et al also found that effective use of this technique was associated with a sense of empowerment, and led to improved self-management skills, as well as a rapid, and long-term, improvement in quality of life.¹⁶ ■

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References

1. Pynnonen MA, Mukerji SS, Kim HM, et al. Nasal saline for chronic sinonasal symptoms: a randomized controlled trial. *Arch Otolaryngol Head Neck Surg.* 2007;133:1115-1120.
2. Gliklich RE, Metson R. Economic implications of chronic sinusitis. *Otolaryngol Head Neck Surg.* 1998;118(3 Pt 1):344-349.
3. International Rhinosinusitis Advisory Board. Infectious rhinosinusitis in adults classification, etiology and management. *Ear Nose Throat J.* 1997;76(12 suppl):s5-s22.
4. Lanza DC, Kennedy DW. Adult rhinosinusitis defined. *Otolaryngol Head Neck Surg.* 1997;117(3 Pt 2):s1-s7.
5. Sharp HJ, Denman D, Puumala S, et al. Treatment of acute and chronic rhinosinusitis in the United States, 1999-2002. *Arch Otolaryngol Head Neck Surg.* 2007;133:260-265.
6. Subramanian HN, Schechtman KB, Hamilos DL. A retrospective analysis of treatment outcomes and time to relapse after intensive medical treatment for chronic sinusitis. *Am J Rhinol.* 2002;16:303-312.
7. Druce HM. Adjuncts to medical management of sinusitis. *Otolaryngol Head Neck Surg.* 1990;103(5 Pt 2):880-883.
8. Tomooka LT, Murphy C, Davidson TM. Clinical study and literature review of nasal irrigation. *Laryngoscope.* 2000;110:1189-1193.
9. Heatley DG, McConnell KE, Kille TL, et al. Nasal irrigation for the alleviation of sinonasal symptoms. *Otolaryngol Head Neck Surg.* 2001;125:44-48.
10. Rabago D, Zgierska A, Mundt M, et al. Efficacy of daily hypertonic saline nasal irrigation among patients with sinusitis: a randomized controlled trial. *J Fam Pract.* 2002;51:1049-1055.
11. Taccariello M, Parikh A, Darby Y, et al. Nasal douching as a valuable adjunct in the management of chronic rhinosinusitis. *Rhinology.* 1999;37:29-32.
12. Harvey R, Hannan SA, Badia L, Scadding G. Nasal saline irrigations for the symptoms of chronic rhinosinusitis. *Cochrane Database Syst Rev.* 2007;(3):CD006394.
13. Keojampa BK, Nguyen MH, Ryan MW. Effects of buffered saline solution on nasal mucociliary clearance and nasal airway patency. *Otolaryngol Head Neck Surg.* 2004;131:679-682.
14. Piccirillo JF, Merritt MG Jr, Richards ML. Psychometric and clinimetric validity of the 20-Item Sino-Nasal Outcome Test (SNOT-20). *Otolaryngol Head Neck Surg.* 2002;126:41-47.
15. Hauptman G, Ryan MW. The effect of saline solutions on nasal patency and mucociliary clearance in rhinosinusitis patients. *Otolaryngol Head Neck Surg.* 2007;137:815-821.
16. Rabago D, Barrett B, Marchand L, et al. Qualitative aspects of nasal irrigation use by patients with chronic sinus disease in a multimethod study. *Ann Fam Med.* 2006;4:295-301.
17. University of Wisconsin Department of Family Medicine. Nasal Irrigation Instructions. Available at: <http://www.fammed.wisc.edu/files/webfm-uploads/documents/research/nasalirrigationinstructions.pdf>. Accessed December 1, 2008.

FAST TRACK

Large-volume, low-pressure nasal irrigation brings greater symptom relief than nasal spray for rhinosinusitis symptoms