Evaluation of Manuka Honey in the Management of Allergic Fungal Rhinosinusitis

Dana Wong, BSc, Talal Alandejani, MD, FRCSC, and Amin R. Javer, MD, FRCSC, FACS

Chronic rhinosinusitis (CRS) is one of the most expensive chronic disorders experienced by the North American population. It is estimated to affect nearly 15% of the US population.[1] Its prevalence is reported to be increasing, thereby attributing to the rise in today's health care costs.[1] Allergic fungal rhinosinusitis (AFRS), a subtype of CRS, accounts for approximately 7% of all CRS patients requiring surgery.[2,3] Many AFRS patients who have undergone functional endoscopic sinus surgery (FESS) continue to develop sinus disease[4] and depend on long-term medical management with either steroids or antifungals, or both, for relief. Unfortunately, the side effects of these medications ultimately lead to their discontinuation and poor control of the disease.

We present two patients (Table 1) diagnosed with AFRS based on Bent and Kuhn's criteria.[3] Both patients underwent FESS and close follow-up with maximal medical management. Both patients were treated with manuka honey irrigation for a 12-week period after failing maximal medical management. Each patient used the manuka honey preparation as provided in the Manuka honey sinus rinse bottles (Honeydoc Products Inc, Montreal, QC) and irrigated each nasal cavity twice a day (120 cc per side twice a day). Both patients completed the 22-item Sino-Nasal Outcome Test (SNOT-22)[5] before and after the 12-week treatment course. Patients had pretreatment and follow-up appointments at 6 and 12 weeks for endoscopic examination of their sinuses.

Case Reports

Case 1

A 71-year-old male patient presented to our clinic with a 3-year history of nasal congestion, nasal discharge, anosmia, and facial pressure. He did not fulfill the criteria for the Samter triad. He had endoscopic evidence of bilateral nasal polyps but did not have asthma or aspirin allergy (see Table 1). He underwent meticulous FESS at our hospital and a 1-week course of prednisone at a dose of 10 mg per day. He was subsequently started on budesonide saline irrigation rinses twice a day. Budesonide saline rinse was prepared by diluting 0.5 mg/2 cc budesonide (AstraZeneca, Mississauga, ON) into 240 cc of saline solution. Patients were instructed to irrigate each nostril with 120 cc of the solution.

Despite the steroid rinses, he continued to develop polyps and allergic mucin bilaterally in his nasal cavities. He had a subsequent polypectomy and was treated with undiluted budesonide (0.5 mg/2 cc) irrigations for 9 months, without any improvement in endoscopic staging (Table 2). Undiluted budesonide was applied intranasally with a Mucosal Atomizing Device (MAD) syringe (Wolfe Toy Medical Inc., Salt Lake City, UT).

Manuka honey in saline rinse as described above was added to his ongoing undiluted budesonide irrigation treatment. At 12 weeks, the patient was symptom free, and endoscopic examination showed no polypoid edema or allergic mucin. His SNOT-22 scores after 12 weeks of treatment showed a significant improvement in sense of smell. His previous complaints of thick nasal discharge, ear fullness, dizziness, and fatigue had resolved completely. Unfortunately, his posttreatment SNOT-22 scores appeared higher for some symptoms (need to blow the nose, a runny nose, and sneezing), suggesting nasal irritation possibly owing to the manuka honey irrigations.

Case 2

A 31-year-old man with a history of severe asthma had suffered for 3 years with sinus pressure, thick nasal

Dana Wong, Tala Alandejani, *and* Amin R. Javer: *St. Paul's Sinus Centre, St. Paul's Hospital, Vancouver, BC.*

Address reprint requests to: Amin R. Javer, MD, FRCSC, FACS, *ENT Clinic, St. Paul's Hospital, 1081 Burrard Street, Vancouver BC V6Z 1Y6; e-mail: sinussurgeon@shaw.ca.*

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Table 1. Demographics

Patient	*Age (yr)*	*Sex*	*Immunocompetent*	*ASA Allergy*	*Asthma Severity*	*CT Scan*	*Histology of Mucin*	*Fungus Culture*	*IgE (μg/L)*	*Eosinophil (giga/L)*
1	73	M	Yes	None	No	Bilateral disease	Allergic mucin	No growth	8	0.2
2	33	M	Yes	None	Severe	Bilateral disease	Allergic mucin	*Aspergillus*	2895	0.2

ASA = acetylsalicylic acid; CT = computed tomographic.

discharge, and difficulty breathing through his nose. He also did not fulfill the criteria for the Samter triad. He had endoscopic evidence of bilateral nasal polyps and suffered from severe asthma but did not have an aspirin allergy (see Table 1). He underwent complete FESS at our hospital and had a subsequent 7-day course of oral prednisone at 10 mg per day.

He had a 3-week period of sinus relief following surgery, but at his 6-week follow-up, he began complaining of severe nasal congestion. Endoscopic examination revealed increasing sinus disease with a Kupferberg staging of IIIb bilaterally. Budesonide saline irrigations and a 10-day course of oral prednisone were started immediately. At the following 12-week appointment, he continued to complain of facial pain and nasal obstruction despite topical management. He had no improvement in sinus symptoms, and his asthma progressively worsened in the following months, requiring several courses of oral prednisone.

He was switched from diluted budesonide saline rinses to undiluted budesonide irrigations for 2 months, without any improvement. Oral itraconazole was added to the undiluted budesonide irrigation regimen and improved both symptoms and endoscopic staging (Table 3). Unfortunately, itraconazole was discontinued after 12 weeks of treatment owing to an increase in liver enzymes, resulting in further deterioration in the patient's symptoms.

Manuka honey saline irrigation was added to the undiluted budesonide irrigations. After 12 weeks, the patient's symptoms and endoscopic examination improved drastically. His SNOT-22 scores showed a significant drop from moderate to very mild symptoms for nasal obstruction, sense of smell, nasal discharge, sleep, concentration, and mood. He did not experience any side effects from the manuka honey.

Discussion

At present, there is no permanent successful treatment for AFRS. A combination of meticulous surgery followed by long-term follow-up and medical treatment is currently the primary modality for managing the disease and delaying recurrence.[4] Steroids have been the mainstay in the first-line treatment to prevent recurrence.[4] Topical antifungal treatment and immunotherapy are also used,

Table 2. Staging Results of Medical Treatments for Patient 1

	Week													
	0		*6*		*12*		*18*		*24*		*30*		*36*	
Medical Treatments	*R*	*L*	*R*	*L*	*R*	*L*	*R*	*L*	*R*	*L*	*R*	*L*	*R*	*L*
Budesonide saline irrigation	IIIb	IIIb	IIIb	IIIb	IIIb	IIIb								
Undiluted budesonide irrigations applied with MAD syringe					IIIb	IIIb	IIIb	IIIb	IIIb	IIIb				
Honey irrigation + undiluted budesonide irrigations									IIIb	IIIb	IIIa	IIIa	0	0

MAD = Mucosal Atomizing Device.

Table 3. Staging Results of Medical Treatments for Patient 2

	Week															
	0		6		12		18		24		30		36		40	
Medical Treatments	*R*	*L*	*R*	*L*	*R*	*L*	*R*	*L*	*R*	*L*	*R*	*L*	*R*	*L*	*R*	*L*
Budesonide saline irrigation	IIIb	IIIb	IIIb	IIIb	IIIb	IIIb										
Undiluted budesonide irrigations applied with MAD syringe					IIIb	IIIb	IIIb	IIIb								
Oral itraconazole + undiluted budesonide irrigations							IIIb	IIIb	IIIa	IIIa	IIa	IIa				
Honey irrigation + undiluted budesonide irrigations											IIIb	IIIb	Ia	Ia	0	0

MAD = Mucosal Atomizing Device.

but with variable clinical efficacy.[4] Despite maximal treatment, the recurrence rate of nasal polyps and esosinophilic mucin remains unacceptably high.[4]

There is a clear need for a better understanding of this disease and for the development of alternative nonsteroidal therapies. To date, there has been minimal success in finding alternative therapeutic agents with good efficacy for treating AFRS.

One agent that has been used for centuries to treat nonhealing wounds, infections, and other ailments has been honey.[6] Honey has been shown to inhibit the growth of a wide range of bacterial, fungi, protozoa, and viruses.[6] Besides its antimicrobial properties, honey has antiinflammatory and antioxidant activities, as well as properties to stimulate cell growth.[6]

Manuka honey has been used in various clinical applications for many years. It has been extensively used in treating nonhealing wounds such as venous leg ulcers, first- and second-degree burns, and surgical wounds.[7] A recent study with rabbit models showed no evidence of histologic epithelial injury to nasal respiratory mucosa with application of manuka honey solution.[8]

The cases presented here suggest that manuka honey irrigation can be considered a potential treatment option for AFRS patients who have failed all alternative treatment regimens. Considering its safety profile and low risk of serious side effects, we feel that manuka honey may also have a role in primary therapy for a subset of CRS patients.

We have recently started treating patients with manuka honey irrigations immediately postoperatively. Preliminary data suggest that manuka honey may speed up the rate of postoperative healing when compared with the traditional normal saline irrigations. More research using double–blinded, placebo-controlled trials for chronic sinusitis, including AFRS, is currently being conducted at our centre and will be reported on shortly.

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