CLINICAL VIGNETTE

Integrative East-West Approach to Treatment of Chronic Sinusitis

Katie Hu, MD

Case Presentation

A 70-year-old male with hypertension, gastroesophageal reflux disease (GERD), and bilateral knee osteoarthritis presented with two years of chronic productive cough, recurring pneumonia, and chronic rhinosinusitis with polyps s/p three sinus surgeries. Patient's recurrent acute on chronic sinusitis flares required steroids every 2-3 months and typically also leads to pneumonia and antibiotics. His first surgery was 12 years ago, second was 6 years ago, and last surgery was a year prior when he had bilateral frontal sinusotomies, total ethmoidectomies, maxillary antrostomies, and sphenoid sinusotomies. However, the sinus surgeries did not alleviate his symptoms.

Typically, the patient's symptoms included rhinorrhea, post nasal drip, nasal and chest congestion, and some facial pain/ pressure in his frontal region. Antibiotics and steroids would clear up his symptoms, however the symptoms returned quickly, starting with cough and phlegm. Phlegm was initially clear and thin and progressed to thick and brown. Nasal congestion then led to chest congestion, dyspnea, and patient was repeatedly diagnosed with pneumonia. Symptoms were associated with persistent anosmia. Prior treatments included antibiotics including lavofloxacin, amoxicillin/clavulanate, and trimethoprim/ sulfamethoxazole, antifungals such as Amphotericin B powder, and short term oral prednisone during acute exacerbations. For maintenance, patient was on a regimen of nasal saline rinse, daily intranasal steroids, and inhaled steroids. Patient was followed by two ENT physicians and a pulmonologist for the past two years. At his latest ENT visit, his PPI was also uptitrated to maximum dose.

At our initial visit he had just completed a course of steroids and antibiotics and denied fevers, chills, and thick phlegm but continued to have his chronic symptoms of productive cough, rhinorrhea, nasal and chest congestion, and post nasal drip. He was emotionally frustrated with his chronic illness. He stated he was "desperate" to get his life back and that we were his "last hope".

During the initial consultation, he also relayed additional clinical history. He stated that he has a very active mind and likes to keep busy. His major stressors included his health condition and a major kitchen remodeling effort which had been "driving him nuts". His diet was not optimal and included 14 alcoholic drinks per week, a lack of hydration, and a significant amount of dairy including cheese and ice cream. He exercised rigorously including 1-2 hours of tennis, walking, and gym exercises daily.

On review of systems, he had constant active right shoulder pain aggravated by playing tennis 6 hours per week and bilateral knee pain from osteoarthritis.

The patient's medication list included nasal budesonide, budesonide-formoterol inhaler, fluticasone nasal spray, hypertonic nasal wash, omeprazole, albuterol inhaler, and valsartan. He also had an Amophotericin B powder and standing order for prednisone taper as needed.

Patient's vitals at his first visit showed an elevated blood pressure of 150/81, afebrile, and a pulse ox of 96%. Pertinent findings included erythematous nasal turbinates, maxillary sinus tenderness, dry mucus membranes, and a normal respiratory exam. Patient had tenderness to palpation of his right trapezius, levator, splenius capitus, and infraspinatus muscles. He had full range of motion of his right shoulder with pain on abduction to 90 degrees as well as with internal rotation.

***Procedures*:** One month prior.

Nasal endoscopy: All sinuses are widely patent. The sinonasal mucosa was minimally edematous. No polyps, pus, or crusts noted.

Rigid laryngoscopy: Bilateral TVF mobile without masses or lesions. +PC edema

Prior Image: No CT images available however prior ENT consult notes "On CT scan his lower sinuses have been well opened and antrostomies are patent, but he has obstruction of his bilateral frontal recesses."

***Labs*:** Bacterial and fungal cultures negative. Acid fast culture negative.

A holistic treatment plan was initiated at patient's first visit, including acupuncture, trigger point therapy, Chinese nutrition, and mind-body practices, as well as an overall emphasis on stress reduction and reduction of inflammation. Acupuncture utilized the following main points: Large intestine 4 and 11, Liver 3, 4 and 5, Stomach 36 and 40, Spleen 6, 9, and 10, San Jiao 5, Gallbladder 20 and 31, Lung 5 and7, Kidney 6, Yintang, and Pericardium 6. Active trigger points were found in the neck and right shoulder and injected with 0.1mL of lidocaine in his trapezius, levator, splenius capitus, and infraspinatus muscles. Patient was instructed to return weekly for 6-8 treatments

including acupuncture, myofascial release, and trigger point injections. Treatments focused on his chronic sinusitis, right shoulder pain, and rebalancing his system using acupuncture, self-care measures, and lifestyle modifications.

The patient's symptoms were mild at the time of initial consult, and self-care recommendations were to reduce overloading his body both mentally and physically. Specifically, he was told to avoid playing tennis for the time being to prevent further aggravation to his right shoulder pain. Instead, we encouraged him to balance his more intensive exercises with gentle exercises such as Tai Chi or walking. Given his environmental and psychological stress, meditation was also recommended. A more optimal diet was also suggested including more water intake and less alcohol consumption. Specific teas were recommended based on Traditional Chinese medicine including barley, and orange peel tea. Fish oil and probiotics were also recommended to decrease inflammation and to improve his overall immune system.

At his second visit he had not start his full self-care regimen but began hydrating more and started supplementation with fish oil. He stated his right shoulder pain improved immediately after the last needle based treatment (acupuncture and trigger point injections), however it was again aggravated by a tennis game. This realization prompted him to agree to stop playing for 2 months. He also noticed a mild improvement in his cough and nasal congestion.

At the third weekly visit the patient felt his right shoulder had improved and denied any pain except with occasional movements. His cough worsened due to a recent viral URI but denied fevers or rhinorrhea but felt more nasal and chest congestion. At this visit, we recommended additional supplements for acute sinusitis, which included a short course of Yin Chiao (a traditional Chinese herbal supplement for viral illnesses) and additional vitamin C.

At the fourth weekly visit he continued to have cough and phlegm but felt the phlegm was thinner. He also decreased his dairy intake as emphasized at each visit. He was cautiously optimistic that he had not yet required steroids or antibiotics for his acute exacerbation.

Finally, at the fifth weekly visit he reported resolution of right shoulder pain. He continued to avoid playing tennis, hydrate more, and was taking fish oil. His cough had improved. Patient was most impressed and happy that he did not require steroids or antibiotics during his recent mild flare up of his rhinosinusitis. He had stopped the additional Chinese herbal supplement Yin Chiao and vitamin C. He also felt less hot in the face/ chest and noticed his knee pain had improved as well.

Over the next few months, he continued to return every 1-2 weeks he reported an overall improvement of his quality of life. He started barley tea and orange peel tea and he reduced dairy intake. Patient began noticing less phlegm and post nasal drip, with only mild nasal congestion. His taste and smell also improved. Most importantly, patient denied rhinosinusitis flare ups requiring antibiotics and steroids. His blood pressure also normalized consistently. He resumed playing tennis without aggravating his right shoulder. He incorporated more self care including heat and stretching for his musculoskeletal complaints (shoulder, neck, low back pain). He also started yoga and gentle walking to balance his more intense exercises and incorporated breathing exercises to help reduce his psychosocial stressors. However, patient continued regular alcohol intake of 14 drinks per week.

Discussion

Chronic rhinosinusitis (CRS) is defined as an inflammatory disorder of the paranasal sinuses and nasal passages lasting 12 weeks or more. It is common with a prevalence of up to 16% of the population.[1] Although not life threatening, it has significant economic burden from diagnostic tests, medical and surgical therapies, lost or reduced school and work productivity, and a significant impact on the physical and emotional health of the patient.[2] Annual U.S costs were estimated at $12.8 billion in 2012.[3]

While acute rhinosinusitis is typically infectious in origin, causes of CRS are thought to be more multifactorial. Environmental, anatomical, and a host of lifestyle and comorbidity factors may contribute to the chronic inflammation in CRS.[2] Clinical manifestation of CRS typically starts as a nonspecific upper respiratory infection or acute sinusitis which then fails to resolve and results in persistent symptoms. The four cardinal symptoms of CRS include anterior and/or posterior nasal mucopurulent drainage, nasal obstruction, nasal blockage or congestion, facial pain/pressure and/or fullness, and reduction or loss of sense of smell. Associated symptoms include cough, sleep disturbance, ear pain or pressure, dizziness, halitosis, dental pain, nasal or throat irritation. Anterior or posterior nasal drainage of CRS is typically white or light yellow interspersed with thick yellow, green, or brown mucus during recurrent acute episodes or flares. It can significantly decrease the overall quality of life with reports of lower quality of life scores for social functioning as well as physical and overall health compared with the general population, similar to patients with chronic lung or heart disease.[4] For diagnosis, two of the four cardinal signs/symptoms are required as well as objective evidence of mucosal inflammation through imaging or direct visualization.

Typical management of CRS includes therapies aimed at reducing symptoms and improving quality of life and not at "curing" the disease. First line treatments include saline washes and sprays, intranasal and systemic glucocorticoids, antibiotics, and antileukotrine agents. Most therapies in CRS have not been validated in randomized trials,[5] and several meta-analyses concluded that evidence supporting most therapies are low quality, further emphasizing the need for more rigorous research in this disorder.[6-11] Outcomes with conventional allopathic treatment of CRS are variable, with frequent relapses[12] causing significant frustration. Dissatisfaction with conventional medicine has pushed patients toward complementary and alternative medicine (CAM) therapies, which despite insufficient evidence, is used either instead of or in combination with conventional therapies.[13]

Integrative medicine is often characterized by a holistic approach to the management of chronic disease and enhancing the body's self-healing mechanisms. Since the risk factors of chronic diseases such CRS is often multifactorial, a holistic multifaceted approach of acupuncture, dietary supplements, and lifestyle modifications rooted in TCM as well as CAM therapies such as yoga, supplements, and mindfulness, can all be utilized to address the systemic imbalances in a patient.

Use of acupuncture in the United States has increased in recent years,[14] and the benefits of this therapy has slowly become more accepted by Western practitioners. Although the exact mechanism of action of acupuncture is still unclear, there is significant use in patients with chronic inflammatory diseases, including CRS,[15] with postulated benefits in its anti-inflammatory effects.[16]

There are few large cohort or randomized controlled trials on acupuncture for the treatment of chronic rhinosinusitis. However preliminary data from prospective studies of acupuncture as an adjunctive treatment for CRS is promising.[17-18]

Dietary modifications are a large component of TCM and are often incorporated to treat illnesses. Research on diet modifications aimed at reducing systemic levels of inflammation, may reduce inflammation of the sinonasal mucosa, as an adjunctive therapy for refractory CRS.[19] In TCM, orange peel and barley tea are both traditionally recommended for rhinorrhea and congestion. TCM also recommends a reduction of "heating" or inflammatory foods such as sweets, dairy, fried foods, and alcohol. Dietary supplementation with polyunsaturated fatty acids such as fish oil has been shown to improve asthma symptoms in adults as well as CRS in children mainly through anti-inflammatory properties.[20,21] Although studies have not found probiotics to be effective in improving quality of life in patients with inflammatory CRS, it may be reasonable to suggest probiotics in patients with frequent antibiotics use to optimize the gut microbiome. Finally, vitamin C can also be added for its anti-inflammatory and antioxidant effects for CRS during acute exacerbations.[22]

Lifestyle modifications focused on minimizing inflammation should be considered as part of a holistic self-care plan. Sleep disturbance and psychosocial stress has been shown to increase inflammation in the body[23-25] and as such, mindfulness-based practices such as yoga, tai chi, or meditation should be suggested. In TCM, physical overloading can exhaust the body and deplete it of vital energy to heal and fight infections. Therefore, physicians should advise against excessive exercise and correct the imbalance between activity and rest when patients are ill and symptomatic.

Conclusion

Chronic rhinosinusitis can be both physically and psychologically challenging and frustrating for patients to live with and for physicians to treat. Current practice guidelines focus primarily on pharmacotherapy. We report a successful case utilizing a comprehensive, integrative approach to treatment including acupuncture, TCM nutrition and diet, dietary supplements, stress reduction and other lifestyle modifications as adjunctive therapies in managing a patient with chronic rhinosinusitis.

REFERENCES

1. **Blackwell DL, Collins JG, Coles R.** Summary health statistics for U.S. adults: National Health Interview Survey, 1997. *Vital Health Stat 10.* 2002 May;(205):1-109. Pub Med PMID: 15786607.
2. **Hamilos, DL.** Chronic rhinosinusitis: clinical manifestations, pathophysiology, and diagnosis. Feldweg AM, ed. UpToDate. Waltham, MA: UpToDate Inc. http://www.uptodate.com (Accessed on September 13, 2018.)
3. **DeConde AS, Soler ZM.** Chronic rhinosinusitis: Epidemiology and burden of disease. *Am J Rhinol Allergy.* 2016 Mar-Apr;30(2):134-9.doi:10.2500/ajra.2016.30.4297. Review. PubMed PMID: 26980394.
4. **Gliklich RE, Metson R.** The health impact of chronic sinusitis in patients seeking otolaryngologic care. *Otolaryngol Head Neck Surg.* 1995 Jul;113(1):104-9. Pub Med PMID: 7603703.
5. **Meltzer EO, Hamilos DL, Hadley JA, Lanza DC, Marple BF, Nicklas RA, Adinoff AD, Bachert C, Borish L, Chinchilli VM, Danzig MR, Ferguson BJ, Fokkens WJ, Jenkins SG, Lund VJ, Mafee MF, Naclerio RM, Pawankar R, Ponikau JU, Schubert MS, Slavin RG, Stewart MG, Togias A, Wald ER, Winther B;** Rhinosinusitis Initiative. Rhinosinusitis: developing guidance for clinical trials. *J Allergy Clin Immunol.* 2006 Nov; 118(5 Suppl):S17-61. PubMed PMID: 17084217.
6. **Chong LY, Head K, Hopkins C, Philpott C, Glew S, Scadding G, Burton MJ, Schilder AG.** Saline irrigation for chronic rhinosinusitis. *Cochrane Database Syst Rev.* 2016 Apr 26;4:CD011995. doi: 10.1002/14651858.CD011995.pub2. Review. PubMed PMID: 27115216.
7. **Chong LY, Head K, Hopkins C, Philpott C, Schilder AG, Burton MJ.** Intranasal steroids versus placebo or no intervention for chronic rhinosinusitis. *Cochrane Database Syst Rev.* 2016 Apr 26;4:CD011996. doi: 10.1002/14651858.CD011996.pub2. Review. PubMed PMID: 27115217.
8. **Chong LY, Head K, Hopkins C, Philpott C, Burton MJ, Schilder AG.** Different types of intranasal steroids for chronic rhinosinusitis. *Cochrane Database Syst Rev.* 2016 Apr 26;4:CD011993. doi: 10.1002/14651858.CD011993.pub2. Review. PubMed PMID: 27115215.
9. **Head K, Chong LY, Piromchai P, Hopkins C, Philpott C, Schilder AG, Burton MJ.** Systemic and topical antibiotics for chronic rhinosinusitis. *Cochrane Database Syst Rev.* 2016 Apr 26;4:CD011994. doi: 10.1002/14651858.CD011994.pub2. Review. PubMed PMID: 27113482.
10. **Head K, Chong LY, Hopkins C, Philpott C, Burton MJ, Schilder AG.** Short-course oral steroids alone for chronic rhinosinusitis. *Cochrane Database Syst Rev.* 2016 Apr 26;4:CD011991. doi: 10.1002/14651858.CD011991.pub2. Review. PubMed PMID: 27113367.
11. **Head K, Chong LY, Hopkins C, Philpott C, Schilder AG, Burton MJ.** Short-course oral steroids as an adjunct therapy for chronic rhinosinusitis. *Cochrane Database Syst Rev.* 2016 Apr 26;4:CD011992. doi: 10.1002/14651858.CD011992.pub2. Review. PubMed PMID: 27115214.

12. **Lalwani AK.** Current Diagnosis and Treatment in Otolaryngology and Head and Neck Surgery. New York, NY: McGraw-Hill Companies Inc; 2004.
13. **Rotenberg BW, Bertens KA.** Use of complementary and alternative medical therapies for chronic rhinosinusitis: a canadian perspective. *J Otolaryngol Head Neck Surg*. 2010 Oct;39(5):586-93. PubMed PMID: 20828524.
14. **Clarke TC, Black LI, Stussman BJ, Barnes PM, Nahin RL.** Trends in the use of complementary health approaches among adults: United States, 2002-2012. *Natl Health Stat Report*. 2015 Feb 10;(79):1-16. PubMed PMID: 25671660; PubMed Central PMCID: PMC4573565.
15. **Blanc PD, Trupin L, Earnest G, Katz PP, Yelin EH, Eisner MD.** Alternative therapies among adults with a reported diagnosis of asthma or rhinosinusitis: data from a population-based survey. *Chest*. 2001 Nov;120(5):1461-7. PubMed PMID: 11713120.
16. **Zijlstra FJ, van den Berg-de Lange I, Huygen FJ, Klein J.** Anti-inflammatory actions of acupuncture. Mediators Inflamm. 2003 Apr;12(2):59-69. Review. PubMed PMID: 12775355; PubMed Central PMCID: PMC1781596.
17. **Kim JI, Choi JY, Lee MS, Kim TH, Kim AR, Jung SY, Shin MS, Kim KH.** Acupuncture for improving chronic rhinosinusitis complicated with persistent allergic rhinitis. A prospective observational study. *Forsch Komplementmed*. 2010;17(6):333-5. doi: 10.1159/ 000322894. Epub 2010 Dec 9. PubMed PMID: 21196747.
18. **Suh JD, Wu AW, Taw MB, Nguyen C, Wang MB.** Treatment of recalcitrant chronic rhinosinusitis with integrative East-West medicine: a pilot study. *Arch Otolaryngol Head Neck Surg*. 2012 Mar;138(3):294-300. doi: 10.1001/archoto.2011.1489. PubMed PMID: 22431875.
19. **Nayan S, Maby A, Endam LM, Desrosiers M.** Dietary modifications for refractory chronic rhinosinusitis? Manipulating diet for the modulation of inflammation. *Am J Rhinol Allergy*. 2015 Nov-Dec;29(6):e170-4. doi:10.2500/ajra.2015.29.4220. Review. PubMed PMID: 26637564.
20. **Villani F, Comazzi R, De Maria P, Galimberti M.** Effect of dietary supplementation with polyunsaturated fatty acids on bronchial hyperreactivity in subjects with seasonal asthma. *Respiration*. 1998;65(4):265-9. PubMed PMID: 9730791.
21. **Linday LA, Dolitsky JN, Shindledecker RD.** Nutritional supplements as adjunctive therapy for children with chronic/recurrent sinusitis: pilot research. *Int J Pediatr Otorhinolaryngol*. 2004 Jun;68(6):785-93. PubMed PMID: 15126020.
22. **Vojdani A, Namatalla G.** Enhancement of human natural killer cytotoxic activity by vitamin C in pure and augmented formulations. *J Nutr Env Med*. 1997; 7:187-195.
23. **Irwin MR, Olmstead R, Carroll JE.** Sleep Disturbance, Sleep Duration, and Inflammation: A Systematic Review and Meta-Analysis of Cohort Studies and Experimental Sleep Deprivation. *Biol Psychiatry*. 2016 Jul 1;80(1):40-52. doi:10.1016/j.biopsych.2015.05.014. Epub 2015 Jun 1. Review. PubMed PMID: 26140821; PubMed Central PMC ID: PMC4666828.
24. **Hannibal KE, Bishop MD.** Chronic stress, cortisol dysfunction, and pain: a psychoneuroendocrine rationale for stress management in pain rehabilitation. *Phys Ther*. 2014 Dec;94(12):1816-25. doi: 10.2522/ptj.20130597. Epub 2014 Jul 17. PubMed PMID: 25035267; PubMed Central PMCID: PMC4263906.
25. **Sorrells SF, Caso JR, Munhoz CD, Sapolsky RM.** The stressed CNS: when glucocorticoids aggravate inflammation. *Neuron*. 2009 Oct 15;64(1):33-9. doi: 10.1016/j.neuron.2009.09.032. Review. PubMed PMID: 19840546; PubMed Central PMCID: PMC4782919.

Submitted October 22, 2018