



Integrative medical approaches to allergic rhinitis

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Purpose of review

Complementary and integrative medicine (CIM), formerly known as alternative medicine, is now part of the mainstream management for patients with a host of medical issues. This current opinion focuses on the use of CIM, more specifically, the use of nutritional and herbal therapies and homeopathic medications for patients with allergic symptoms.

Recent findings

The literature review revealed that naturally occurring substances when compared with placebo more often than not resulted in significant improvement of the allergic rhinitis symptoms.

Summary

Despite encouraging results, additional studies with greater rigor are needed.

Keywords

allergies, herbs, homeopathy, nutritional supplements and complementary and integrative medicine, traditional Chinese medicine

INTRODUCTION

More than 50% of patients with allergies and asthma use some form of complementary and integrative medicine (CIM) [1]. The majority of alternative approaches are effective and often have fewer side effects compared to conventional medications. Some of the herbal and homeopathic approaches directly address the underlying physiologic imbalances that perpetuate the allergic response. Moreover, since many of our patients are employing CIM techniques, some familiarity with these approaches is important for the practicing physician.

The present article elucidates some of the research in this area, as well as discusses commonly used homeopathic medications, herbal, and nutritional supplements shown to be effective for the management of allergies and asthma.

In terms of clinical practice, integrative therapeutic modalities may be used in two ways: herbs, homeopathics, or nutritional supplements with known pharmacologic effects can be used as a replacement for drugs or used in conjunction with them; and integrative modalities may be used to theoretically restore balance in the immune response, thereby reducing the allergic response.

THE ROLE OF COMPLEMENTARY AND INTEGRATIVE MEDICINE IN THE TREATMENT OF SEASONAL AND PERENNIAL ALLERGIC RHINITIS

CIM utilizes both conventional and nonconventional methods for evaluation and therapeutic healing. For the purpose of this discussion, the focus will be to highlight alternative modalities or nonconventional approaches to the patient with allergies. The conventional medical strategy for allergy treatment applies immunotherapy or attempts to block the immune response through drugs such as antihistamines, leukotriene inhibitors, and/or steroids. Alternative strategies often replace drugs with less pharmacologically active agents such as nutritional

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Curr Opin Otolaryngol Head Neck Surg 2015, 23:221–225

DOI:10.1097/MOO.000000000000152

KEY POINTS

- More than 50% of people with allergies and asthma use some form of CIM.
- Traditional Chinese medicine has effectively used herbal therapies for over 8000 years.
- There is research establishing the efficacy of many herbal and nutritional therapies for allergic rhinitis.
- An integrative medical approach to allergic rhinitis considers systemic inflammation as a cause.
- Additional studies need to be done on herbal and nutritional therapies for allergic rhinitis so that therapeutic guidelines may be developed.

supplements, homeopathics, and herbs. Other alternative therapies attempt to identify ‘underlying imbalances’ in the individual and correct them, including application of detoxification strategies. In current integrative medicine terminology, this describes ‘the inner milieu’ or the ‘biological terrain’ of the individual which needs to be ‘restored’. Western medicine has no language or conceptual framework for the concept of restored balance, but restoration of balance serves as the foundation for health in traditional Chinese medicine (TCM), Ayurvedic medicine, naturopathy, and homeopathy. For the treatment of allergy, these systems would attempt to address the underlying imbalances in the individual that may exacerbate the allergic response.

THE ROLE OF INFLAMMATION

Inflammation from food sensitivities, gut dysbiosis, chronic stress, and so on plays a role in an individual’s response to allergens [2]. The physician’s role is to attempt to identify and correct the underlying pro-inflammatory issues and thereby reduce the inflammatory load on the body. As a by-product of this approach, allergy symptoms can be mitigated by promoting the overall health and well being of the patient.

NUTRITIONAL AND LIFESTYLE FACTORS

The association between nutritional deficiencies and allergies has been well studied. Several reports have shown a relationship between vitamin D3 deficiency and asthma in humans, as well as allergies in the animal model, whereas other studies failed to show a relationship [3,4]. There is a large body of literature on exercise and the immune response, but its specific effect on allergies remains

unknown. Stress is also known to affect the immune response, with studies demonstrating a direct relationship to atopic disorders [5].

There are compelling data demonstrating that nutritional status of the mother and child has significant effects on atopic disease from childhood through adulthood. Studies indicate that children with asthma tend to have low plasma levels of coenzyme Q10, selenium, and vitamins A and E [6–8]. Deficient prenatal vitamins D and E and selenium status may be involved with childhood asthma [9,10], and children with low dietary intake of beta carotene tend to have a higher incidence of rhinitis. It has also been shown that children with low intake of magnesium are more likely to suffer from asthma [11]. In a study using hair analysis to measure nutritional status, the investigators found a positive correlation between zinc and selenium deficiency and recurrent wheezing in children [12].

HOMEOPATHIC MEDICATIONS

Several types of nonpharmacologic nasal sprays have been shown to be effective for the treatment of allergic rhinitis. Homeopathic euphorbium nasal spray was shown to be an effective nasal decongestant without the rebound effect commonly seen with conventional decongestants [13]. Other nasal sprays – one containing dead sea salts and the other xylitol – are effective for rhinosinusitis patients and may also be helpful to allergic rhinitis patients. A study published in 2000 in the *British Medical Journal* [14] measured nasal air flow and found a statistically significant improvement in those patients who were treated with a homeopathic medication (30ml dilution of the principal allergen) versus placebo.

TRADITIONAL CHINESE HERBAL MEDICINE

Traditional Chinese herbal medicine has been practiced for over 80 centuries and is still evolving today. The Chinese pharmacopeia has over 13 000 medicinal and more than 100 000 herbal combinations recorded in ancient literature [15]. Phytopharmacologists are discovering the active ingredients in a number of standardized herbal preparations and their pharmacokinetics. Although the prevalence and use of traditional Chinese herbal formulations is on the rise globally [16], there are limited high-quality large-scale multicentered trials validating their safety and effectiveness published in English [17]. Several studies validate the efficacy of Chinese herbal medicine in the treatment of atopic dermatitis [18–20]. It is a common practice to use both acupuncture and herbal medicine in treating

allergic rhinitis in China [21], but very few studies combine them. In one randomized, placebo-controlled trial of a Chinese herbal remedy for seasonal allergic rhinitis (SAR), 28 patients were randomized to the active extract capsule and 27 were randomized to placebo daily for 8 weeks. The active treatment group reported significantly less symptoms compared to the placebo group, showing moderate to marked improvements of 60.7 and 29.6%, respectively. The study concluded the following: 'This Chinese herbal medicine formulation appears to offer symptomatic relief and improvement of quality of life for some patients with SAR' [22]. Countless Chinese herbal remedies are commonly prescribed for allergic rhinitis. Well conducted trials have reported these herbal decoctions to possess antiallergic, anti-inflammatory, or immunomodulatory actions, such as inhibition of the release of mast cell mediation such as histamine, inhibition of inflammation induced by chemical agents, and modulation of serum IgE levels or of lymphocyte and/or macrophage activity [23–26]. Xue *et al.* [22] used a decoction containing 18 herbs and compared it to placebo treatment. The researchers were able to show significant reduction in symptoms in the treated group [22]. Another double-blind, randomized, placebo-controlled study (DBRPCS) investigated a single herb – Xin-yi-san – as compared to placebo; the herb showed a significant improvement in nasal congestion, suppressed serum IgE levels, and increased interleukin (IL)-10 and IL-8 [27]. *Ganoderma lucidum* (lingzhi or reishi) is a mushroom known for being rich in zinc, copper, iodine, selenium, and iron. The mushroom also contains oligosaccharides, triterpenoids, peptides and proteins, dietary fiber, alcohols and phenols, vitamins, and amino acids, and can treat asthma and allergies by supporting immune system function [28,29].

WESTERN HERBAL MEDICINE

Purified bee honey has a rich history of use as a natural remedy for treatment of seasonal allergies due to pollen exposure. In an RCT published in 2013, honey ingested at 1g/kg of body weight showed significant improvement in individual allergic rhinitis symptoms compared to the controls and could serve as a complementary therapy for allergic rhinitis [30].

Butterbur or *Petasites hybridus* has strong pharmacologic activity, particularly as it relates to antileukotriene and antihistamine activity. Butterbur is native to Europe, northern Africa, and southwestern Asia, and has been used for the management of asthma, smooth muscle spasms, headaches, and migraine. Multiple studies have demonstrated

favorable results for butterbur in the treatment of allergic rhinitis when compared to placebo or conventional antihistamine pharmacotherapy. Specifically, a prospective randomized, double-blind study (RDBS) assessed changes in symptoms; physician's global assessment and responder rate found butterbur and fexofenadine to be significantly better at controlling allergic rhinitis compared to placebo. However, there was no significant difference between the antihistamine and the butterbur [31]. Another study comparing butterbur versus cetirizine in a RDBS showed no significant difference between the two treatments, and trends favored butterbur for the management of allergic rhinitis [32]. Other well designed studies have shown similar findings [33–35]. Although further study is warranted, there seems to be good evidence for the efficacy of butterbur for the management of allergic rhinitis. One word of caution: some preparations can contain unsaturated pyrrolizidine alkaloids (UPA), which may be hepatotoxic, nephrotoxic, mutagenic, carcinogenic, and associated with veno-occlusive disease. It is therefore important for patients to use preparations that are certified free of UPA [36]. There is a 'controlled' brand called Petadolex (Weber & Weber GmbH & Co Germany) that is used in the management of migraines, and may also prove efficacious for allergic rhinitis. The herb *Tinospora cordifolia* appears effective for the symptoms of nasal discharge, sneezing, nasal obstruction, and itching [37]. Stinging nettle and the antioxidant quercetin are often used in combination in many allergy preparations, but there is only empirical evidence to support their use [16]. Plant sterols have been shown to balance the Th1 and Th2 immune response [16]. Spirulina, derived from *Arthrospira platensis*, is a blue green alga found in both fresh and salt water. A RDBS was designed to evaluate the effects of spirulina as it is known to inhibit release of histamine from the mast cells and has also been shown to increase interferon (INF)- γ . The study found significantly reduced IL-4 levels in the experimental group, but unfortunately did not evaluate symptomatology [38]. Spirulina is also known to alkalinize the body, reducing the inflammatory load. Milk thistle, with the purported active ingredient silymarin, is a complex of three flavonolignans: silibinin, silydianin, and silychristin. It has been shown to stabilize the cell membrane. In a head-to-head study, silymarin was compared to placebo using the sinonasal outcome test 20 (SNOT-20) as an evaluation tool. Both study groups received cetirizine in addition to placebo or silymarin, and both groups showed significant improvement in clinical symptom severity. However, the silymarin-treated patients showed a significantly larger improvement in

SNOT-20 when comparing pre and post-treatment numbers [39].

A yeast preparation – *Saccharomyces cerevisiae* – has also been studied for its ability to treat allergic rhinitis. A DBRPS compared *S. cerevisiae* to placebo using a QOL questionnaire where a significant reduction in nasal congestion, rhinorrhea, and reduced number of days with nasal congestion was observed [40]. One of the chemicals in soy sauce – shoyu polysaccharides – has been studied as a possible treatment option for allergic rhinitis. Using measures of QOL improvement, investigators performed a DBRPCS comparing oral supplementation of shoyu polysaccharides to placebo. They demonstrated a significant reduction in symptom scores measuring runny nose, sore throat, and pruritic eyes compared to placebo [41]. Lastly, skull-cap – a flowering plant also known as *Scutellaria baicalensis* – has a long history of use as a treatment for allergic rhinitis. A study investigated changes in IgE and cytokine levels in mice when a notable decrease in plasma IgE and IL-5 was identified; however, neither was statistically significant [42].

NUTRITIONAL SUPPLEMENTS

Supplementation with antioxidants including CoQ10, vitamins A, C, E and B₆, EPA, DHA, citrus bioflavonoids, zinc, selenium, and calcium led to increased plasma concentrations of the vitamins and minerals in patients after 2 months on the regimen, leading to lower IgE levels, markedly reduced MDA, CU, hs-CRP, and CD19 and CD4/CD8 ratios, thus improving pulmonary function in patients with mild to moderate allergic asthma [43]. Specifically, vitamin E and tocopherol acetate are known to inhibit the formation of leukotrienes and inhibit an antibody response in asthma patients. DHEA has been shown to modulate autoimmune reactions, appears protective in asthma and allergy, and may affect production of Th1 and Th2-associated cytokines improving atopic eczema and dermatitis [44,45]. Quercetin is a bioflavonoid found in many vegetables and fruits that is believed to inhibit basophil and mast cell degranulation. The effect of quercetin on dendritic cell activation and function was studied. The group identified a significant inhibition on dendritic cell activity through reduced production of pro-inflammatory cytokines and chemokines. Quercetin was also found to block endocytosis by dendritic cells and limit its immunostimulatory effects [46]. A separate study noted that quercetin was nearly twice as effective as sodium cromolyn in reducing inflammation measured by both leukotriene and neutrophil lysosomal enzyme production [47].

SAFETY CONSIDERATIONS

Herbal and nutritional supplements do not have the potency of standard medications, and when taken appropriately, may have side effects; however, they will rarely cause serious complications. With regard to TCM, in 1994, there were approximately 106 000 deaths per year in America due to the proper use of medication (45 per 100 000 people) [48] and 65 deaths due to raw herbs and herbal combinations in China (0.0055 per 100 000 people) [49], demonstrating that herbal medicine is over 7000 times less likely to be fatal compared to pharmaceutical medications. There are currently over 28 000 practicing licensed acupuncturists in the United States treating over 5 million patients per year; not a single death has been attributed to acupuncture or Chinese herbal medicine in the past 35 years in America [50].

CONCLUSION

There are effective modalities in the field of CIM that can be considered in the management of the allergy patient. Clearly, consumer interest is growing in this area and evidence is emerging to establish that these treatments can be used safely and effectively. Additional studies are warranted to evaluate the efficacy or lack thereof of these types of interventions.

Acknowledgements

None.

Financial support and sponsorship

None.

Conflicts of interest

Dr Michael Seidman receives NIH funding (Grant #1R01DC011321) for his work T-bone simulator study, and the remaining authors have no conflicts of interest.

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