Developed in China 5000 years ago, acupuncture is among the oldest medical interventions, yet little is known about its mechanism of action. Researchers have postulated alterations in immune or nervous system function with release of endorphins and changes in inflammatory and regulatory cells and their cytokine profiles, but none have been convincingly demonstrated. A 2009 systematic review of randomized trials evaluated the effectiveness of acupuncture in preventing and treating allergic rhinitis.[550] Compared to sham acupuncture, only 1 of 4 SAR trials found acupuncture to be effective for reducing symptoms.[550] For PAR, 2 of 4 trials demonstrated symptom improvement. The investigators concluded that the evidence for acupuncture is mixed and larger well-controlled studies are needed.

A more recent systematic review and meta-analysis of acupuncture for AR treatment included publications in both English and Chinese languages and identified 13 papers (of 174) that met inclusion criteria.[551] The studies involved 2365 participants with both SAR and PAR. The control groups included sham or no acupuncture and outcome measures included nasal symptom scores, relief medication scores, and QOL measures. Compared with control treatment, acupuncture led to significant reductions in nasal symptoms, intake of relief medications, and sIgE levels. There was a trend in favor of active therapy in ameliorating QOL measures. Another systematic review evaluated alternative health practices in both English and Chinese literature and identified 20 (of 1460) trials that met inclusion criteria and involved 2438 participants with AR where alternative health practices were compared with placebo or Western medicine.[552] In general, the analysis showed that alternative health practices were superior to placebo and not different from Western medicine in control of symptoms and QOL.

A randomized controlled trial with 12 sessions of acupuncture over 4 weeks in Australian patients with SAR showed improvements in symptom scores and QOL compared to sham acupuncture.[553] An accompanying editorial questioned the clinical significance of these findings though, as only selected symptom scores of sneezing and itching were improved.[554] In the largest and highest quality multicenter study, 422 patients allergic to birch and grass were randomized to 12 real or sham acupuncture sessions over 8 weeks. There was an improvement in QOL scores and antihistamine use, but these did not meet predefined levels for clinical significance.[555] Finally, in the largest pediatric study to date, 72 Chinese children were randomized to twice weekly real or sham acupuncture for 8 weeks with an improvement in symptom scores but not medication use, IgE levels, or blood or nasal eosinophil levels.[556]

In conclusion, the results of acupuncture for AR are mixed, at best modest, and of uncertain clinical importance. However, it is very safe, with no serious adverse results reported in any studies.

Herbal medications

Recommendation 37. *CBS:* We cannot make a recommendation for or against the use of specific herbal products for the treatment of AR.

Strength of recommendation: N/A

Certainty of evidence: Ungraded due to lack of adequate studies.

One alternative medical therapy is Chinese herbal medicine (CHM), which has been used for centuries to treat nasal symptoms related to allergic conditions. Studies can be hard to interpret as they use different products and methodologies, and many are industry-funded. A review of one such CHM, Yu ping feng san, identified 22 randomized controlled trials (of 1244 records) with 2309 participants with AR.[557] Control groups included placebo, pharmacotherapy, and the combination of CHM and pharmacotherapy, and the treatment periods ranged from 2 to 8 weeks. Results were limited in the placebo-control trials and suggested a trend for benefit from CHM in a very small number of studies. When CHM was compared with pharmacotherapy, there was no superiority of CHM to antihistamines or intranasal steroids. There was also a hint of superiority of CHM when used in combination with pharmacotherapy compared with pharmacotherapy alone. Reported adverse events were mild and transient. Another review analyzed CHM in PAR and identified 7 randomized controlled trials (of 266 studies) including 533 patients treated between 2 weeks and 3 months.[558] Compared with placebo, CHM significantly reduced nasal symptoms with a moderate side effect profile that lasted a short time.

A 2007 systematic review examined 16 randomized controlled trials with 10 different products and found evidence that *Petasites hybridus* (butterbur) improves symptoms and QOL comparably with a nonsedating antihistamine.[559] A proposed mechanism of action for *P hybridus* is inhibition of the synthesis of cysteinyl leukotrienes by an ingredient, petasin 1, but there is no evidence for the mechanisms of possible action for other proposed herbal remedies. Studies with Aller-7, a mixture of 7 Indian plants suggested improvement in some symptoms, but this was inconsistent across studies and contradicted in other studies.[559] Studies of 3 Chinese herbal preparations showed some positive results in symptom scores; however, in one study only sneezing was significant.[559] Furthermore, another study reported that it required 5 weeks of herbal treatment to reach statistical significance.[559] The investigators state there is moderately strong evidence to support the use of butterbur but that for Chinese herbal products independent replication is necessary.[559] More recently, a 2012 meta-analysis of 7 trials showed an improvement in symptom scores with traditional CHM,[558] but in a 2018 meta-analysis of 11 trials, there was improvement in QOL but not in symptom scores.[560]

The 2012 National Health Interview Survey showed 34% of US adults used complementary health approaches, including herbal medicines, in the previous year.[561] Physicians need to question patients on their use of these products as they can have toxicity and drug-herb interactions. The National Institutes of Health have a webpage devoted to butterbur stating that raw, unprocessed butterbur plant contains pyrrolizidine alkaloids, which can cause liver injury, and recommending that only products certified pyrrolizidine alkaloids–free should be used. There is potential for allergic reactions to butterbur in patients sensitized to ragweed, chrysanthemums, marigolds, and daisies.[562] While butterbur has the most promising data, more studies are needed to demonstrate the efficacy and safety of herbal medicines before we can endorse them.

SUBPOPULATIONS WITH RHINITIS

Pediatric patients and rhinitis

Rhinitis in children shares most of the pathophysiologic, clinical, diagnostic, and therapeutic characteristics observed in adults. The most frequent comorbidities of AR in children are allergic conjunctivitis, asthma, and atopic dermatitis.[21,563] AR is