

Patients with severe chronic rhinosinusitis show improvement with Verapamil treatment

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Benjamin S. Bleier, M.D., examines a patient in the Mass. Eye and Ear Sinus Center. Credit: John Earle for Massachusetts Eye and Ear

A clinical trial studying the use of Verapamil (a drug currently in use for cardiovascular disease and cluster headache) in alleviating chronic rhinosinusitis (CRS) with nasal polyps revealed significant improvement in the symptoms of this subset of patients. It is the first study of its kind to explore treatment for CRS by inhibiting P-glycoprotein, a protein pump within the nasal lining that Mass. Eye and Ear researchers previously identified as a mechanism for these severe cases of CRS marked by the presence of nasal polyps. The clinical trial results, published online today in the *Journal of Allergy and Clinical Immunology: In Practice*, suggest that Verapamil represents a promising novel therapy for the treatment of CRS with nasal polyps.

"Recently, we became aware that some of the inflammation in CRS with [nasal polyps](#) is generated by the nasal lining itself, when a particular protein pump (P-glycoprotein) is

overexpressed and leads to the hyper-secretion of inflammatory cytokines," said senior author Benjamin S. Bleier, M.D., a sinus surgeon at Mass. Eye and Ear and an assistant professor of otolaryngology at Harvard Medical School. "Verapamil is a first-generation inhibitor that is well-established in blocking P-glycoprotein. In some patients with CRS with nasal polyps, we saw dramatic improvement in their symptom scores."

One of the more prevalent chronic illnesses in the United States, CRS has been known to cause significant quality of life detriments to affected patients, who often cannot breathe or sleep easily due to obstructed nasal and sinus passages. The presence of nasal polyps represents a particularly severe presentation of the disease. Current treatment strategies (most often long-term steroid use) are plagued by difficult side effects and fail to target an underlying source of the disease.

Motivated by their previous finding of the presence of P-glycoprotein overexpression in the nasal lining of patients with CRS with nasal polyps, the study authors conducted a randomized, double-blind, placebo-controlled clinical trial studying the use of low-dose Verapamil in 18 patients with CRS with nasal polyps. An analysis of these patients demonstrated improved outcomes for those in the Verapamil group in relation to those in the placebo group. However, the researchers also observed that the treatment effect was significantly limited among patients with higher body mass indices. Future studies are being planned to determine if a higher dose of Verapamil may be needed to be therapeutic for some patients.

"Chronic rhinosinusitis with nasal polyps is among our most challenging diagnoses to treat, because these patients essentially have chronic, lifelong inflammation that needs chronic, lifelong

treatment," said Dr. Bleier. "We observed no significant side effects at the doses we used, and we are very encouraged by the results of this first step toward a more targeted therapy for our [patients](#)."

More information: Marcel M. Miyake et al, Double-blind placebo-controlled randomized clinical trial of verapamil for chronic rhinosinusitis with nasal polyps, *Journal of Allergy and Clinical Immunology* (2017). DOI: [10.1016/j.jaci.2016.11.014](https://doi.org/10.1016/j.jaci.2016.11.014)

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