

## Improvement and prevention of asthma with concomitant treatment of allergic rhinitis and allergen-specific therapy

David J. Mener, MD, MPH and Sandra Y. Lin, MD

**Background:** Asthma and allergic rhinitis are 2 of the most prevalent chronic medical diseases. Asthma is estimated to affect 8% of adults and 9% of children, with nearly 300 million people affected worldwide. Poorly controlled allergic rhinitis may be associated with worsening asthma symptoms over time. Various treatments have been proposed in the improvement and prevention of asthma in children and adults with allergic symptoms, which have included pharmacotherapy with antihistamines and topical intranasal corticosteroids, as well as allergen-specific immunotherapy.

**Methods:** Articles were selected through PubMed and personal knowledge of the authors based on a comprehensive literature review examining whether treatment of allergic rhinitis improves and/or prevents concomitant symptoms of asthma. The largest and highest-quality studies were included in the literature review. The search selection was not standardized. Articles written in a language other than English were excluded.

**Results:** Clinical trials have showed improvement in asthma symptoms with concomitant treatment of allergic rhinitis with antihistamines and topical intranasal corticosteroids, though improvement in objective pulmonary function pa-

rameters has not been uniformly demonstrated with antihistamine use alone. There is very strong evidence to suggest that subcutaneous and sublingual immunotherapy may in addition prevent the progression of asthma in high-risk atopic patients by inducing immunological tolerance.

**Conclusion:** Traditional pharmacotherapy with antihistamines and topical intranasal steroids has been shown to improve allergic rhinitis symptoms with concomitant allergic asthma; however, only allergen-specific immunotherapy offers long-term control in improving asthma symptoms, exacerbations, and likely ultimate prevention in developing asthma. © 2015 ARS-AAOA, LLC.

**Key Words:**

allergic rhinitis; asthma; allergen-specific immunotherapy; sublingual immunotherapy; subcutaneous immunotherapy; intranasal corticosteroids; antihistamines

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Asthma and allergic rhinitis (AR) are 2 of the most prevalent chronic medical diseases, with asthma affecting nearly 8% of adults, 9% of children,<sup>1</sup> and encompassing nearly 300 million persons worldwide.<sup>2</sup> The prevalence of AR has nearly doubled since 1970<sup>3</sup> and is estimated to cost more than 2 billion dollars annually in the United States.<sup>4</sup> Nearly 80% of patients with typical asthma symptoms also report general nasal symptoms, with 40% of rhinitis patients reporting coexisting asthma.<sup>5</sup>

Department of Otolaryngology–Head and Neck Surgery, Johns Hopkins School of Medicine, Baltimore, MD

Correspondence to: David J. Mener, MD, MPH, Johns Hopkins University, Department of Otolaryngology–Head and Neck Surgery, 601 N. Caroline Street, 6th Floor, Baltimore, MD 21287; e-mail: david.mener@gmail.com

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AR encompasses symptoms consistent with an allergic cause such as clear rhinorrhea, nasal congestion, pale nasal mucosa, red and watery eyes in response to inhaled allergens.<sup>6</sup> Asthma is a condition that encompasses chronic inflammation of the lower airway resulting in expiratory obstruction, with recurrent attacks consisting of cough, wheezing, and chest tightness. Bronchial hyperreactivity may represent an intermediate phase along the disease spectrum leading from nasal AR to asthma.<sup>7</sup> Asthma and AR both affect the mucosa of the respiratory tract and may share a common TH2 immunologic-mediated imbalance.<sup>8</sup> In addition, AR has been shown to be a 2-fold to 7-fold risk factor for development of asthma,<sup>9,10</sup> with more than 20% of all patients with asthma suffering from rhinitis<sup>11</sup> and 40% of infants with atopic dermatitis<sup>12</sup> developing asthma ultimately.<sup>11,12</sup> Both conditions may be exacerbated by re-exposure of airborne allergens. This may lead