

New therapeutic strategy for CRSwNP with asthma, focusing on the concept of ‘one airway, one disease’

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ABSTRACT

The concept of “one airway, one disease” or “united airway” reflects a comprehensive approach to the treatment of upper and lower airway inflammation. One of the representative diseases for this concept is known as eosinophilic chronic rhinosinusitis (ECRS) combined with asthma, and severe inflammation of the upper airways is associated with severity of asthma. The treatment of upper airway ECRS by endoscopic sinus surgery (ESS) reduces the dose of inhaled corticosteroids (ICS) used to treat asthma. Although little is known about how the effects of the resistance of upper and lower airway inflammation, there are three possible mechanisms for the observed association between upper and lower airway inflammation: 1) the nasobronchial reflex (NBR); 2) postnasal drainage of inflammatory mediators from the upper to the lower airways; and 3) the reduction of systemic mediators disseminating from the upper airways. Here we investigated the relationship between the upper and lower airways, focusing on NBR. Using a murine model, our system can simultaneously measure both upper and lower airway resistance. We found that airway resistance involved an interaction between the upper and lower airways via the cholinergic nerve and this response during allergic airway inflammation was higher than that of the negative controls. Thus, understanding the relationship between the upper and lower airways in the context of NBR sheds light on novel therapeutic strategies for ECRS accompanied by asthma. Additionally, in this symposium, we present our clinical trial that involved consisted of both an otolaryngologist and pulmonologist, as well as future perspectives, focusing on “one airway, one disease.”