Complications of Rhinitis

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KEYWORDS

• Complications • Rhinitis • Asthma and COPD • Sleep disturbance
• Learning impairment • Quality of life

KEY POINTS

- Individuals with chronic rhinitis should be screened for comorbid conditions, including asthma, chronic obstructive pulmonary disease (COPD), and rhinosinusitis to aid in treatment of these disorders.
- Rhinitis can lead to behavioral complications, such as learning impairment and sleep disturbances.
- The multiple complications of rhinitis lead to decreased quality of life (QOL).

INTRODUCTION

Chronic rhinitis involves inflammation of the upper airways and complications and comorbid conditions often arise. As the prevalence rises, there needs to be greater recognition of the influence of rhinitis on other disorders, such as asthma, COPD, and rhinosinusitis, as well as QOL issues, including sleep disturbances and learning impairment (**Fig. 1**).

RHINOSINUSITIS

Rhinosinusitis is often noted as one of the most common complications or comorbidities of rhinitis. A large volume of literature discusses the relationship between allergic rhinitis (AR) and rhinosinusitis, especially chronic rhinosinusitis (CRS). Non-AR (NAR) and its association to rhinosinusitis however, have not been well studied.

Observational studies support the association of AR and acute rhinosinusitis (ARS) in both pediatric and adult studies. In a cross-sectional study of 1008 atopic and nonatopic adults, atopic individuals had significantly increased risk of upper respiratory tract infections, suggesting that atopy may be a risk factor for ARS.[1] Similarly, a large

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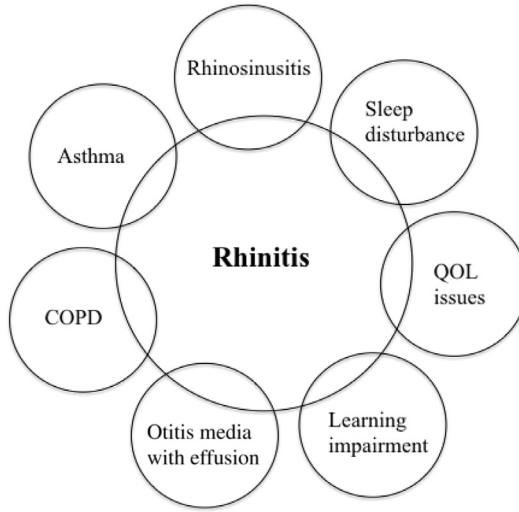

Fig. 1. Complications of rhinitis.

study from Taiwan determined that the prevalence of rhinosinusitis was higher in children with AR than in children without AR.[2] Moreover, Holzmann and colleagues[3] reported that orbital complications of ARS were more likely to occur in patients with AR during their pollen season. The role of AR in ARS is also suggested by a radiologic study that reported sinus mucosal thickening on CT scans of 60% of ragweed allergic subjects during ragweed season.[4] The radiographic abnormalities persisted in many of these subjects despite improvement in symptoms with medical treatment. Persistence of radiographic disease despite clinical improvement suggests a lack of etiologic connection between AR and ARS.

There are also numerous studies showing that atopy is more prevalent in populations with CRS. The prevalence of positive skin prick testing ranges from 50% to 84%.[5–7] Given the high prevalence of atopy in patients with CRS, it has been postulated that atopy and AR contribute to the severity of CRS. In pediatric patients undergoing functional endoscopic sinus surgery, children with AR had a significantly longer recovery time after surgery compared with nonatopic children, suggesting that atopy was a risk factor for protracted sinus disease.[8] When measuring CRS severity by sinus CT scan, there have been mixed results related to atopy. In studies looking at severe CRS, the extent of disease radiographically was significantly correlated with peripheral eosinophilia and the presence of atopy.[9,10] In patients undergoing revision sinus surgery, Batra and colleagues[11] found that patients with AR had worse endoscopic sinus severity and a higher mean Lund-Mackay score than those without allergies. Ramadan and colleagues[12] noted similar findings and found that allergic patients with CRS had higher CT scan scores (mean score = 12) compared with nonallergic patients with CRS (mean score = 6). Pearlman and colleagues[13] found no significant difference between mean Lund-Mackay score and presence of atopy in patients with CRS evaluated at a tertiary care otolaryngology clinic. Similarly, Tan and colleagues[7] found that there was no difference in Lund-Mackay scores among atopic and nonatopic patients with CRS undergoing sinus surgery. Finally, data linking AR and CRS are suggested by an observational study from a large group of primary care patients, which demonstrated that AR and chronic rhinitis were premorbid conditions associated with a diagnosis of CRS.[14] These studies suggest evidence of an association