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**Title:** Chronic paranasal sinusitis exacerbates allergic inflammation in patients with asthma and contributes to refractoriness to treatment

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**Body:** Background: Factors such as airway inflammation, airway hyperresponsiveness, and airway remodeling contribute to the pathogenesis of refractory asthma in a complex fashion. Many studies have reported the development of severe disease in patients with asthma associated with allergic rhinitis. However, the relation between chronic paranasal sinusitis and severe asthma remains largely uninvestigated. In the present study, we examined whether the concurrent presence of paranasal sinusitis contributes to the development of refractory asthma. Subjects: Three groups of patients were studied: those with asthma, those with chronic paranasal sinusitis, and those with both asthma and paranasal sinusitis. Peripheral eosinophil counts, serum IgE levels, exhaled nitric oxide (FeNo) levels as a marker of airway inflammation, and airway hyperresponsiveness were compared among the groups. Results: Peripheral eosinophil counts, FeNo levels, and serum IgE levels were higher in patients with asthma and chronic paranasal sinusitis than in patients with asthma alone and patients with chronic paranasal sinusitis alone. Airway hyperresponsiveness was slightly increased in patients with chronic paranasal sinusitis, but was further increased in patients with asthma, and was significantly increased in patients with asthma plus chronic paranasal sinusitis. Conclusions: Our results suggest that chronic paranasal sinusitis may modify airway inflammation in patients with asthma and contribute to the exacerbation of disease. Paranasal sinusitis should thus be adequately treated in patients with asthma complicated by chronic paranasal sinusitis.