Establishing a Multidisciplinary Approach For The Immunologic Workup of Pediatric Chronic Rhinosinusitis

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Introduction

Pediatric chronic rhinosinusitis (CRS) is a poorly defined clinical entity that draws most of its diagnostic and management paradigms from extrapolation of adult CRS. It is unknown whether pediatric CRS represents the first presentation of an underlying immunologic derangement, or is an umbrella term for multiple disease entities that have phenotypic similarities. Recent literature has demonstrated an increased prevalence of immunodeficiency in patients with CRS, however there is no consensus on the role of immunologic testing in the evaluation of CRS. Patients may benefit diagnostically from an immunologic evaluation when presenting to an otolaryngologist with recalcitrant symptoms. This pilot study aims to examine the prevalence of immunologic disease in pediatric CRS patients and propose a serologic testing panel to be incorporated into the overall treatment algorithm.

Methods

We searched for pediatric CRS patients between 2015-2018 using ICD-9/ICD-10 codes. CT scans were scored using the Lund-Mackay staging system. Medical records were reviewed for patients who were evaluated with a serum immunology panel including celiac serologies, t-lymphocytes, quantitative immunoglobulins and subclasses, Streptococcal antibodies, thyroid evaluation, Haemophilus antibodies, Diphtheria antibodies, and a complete blood count.

Results

We identified 9 patients with CRS who underwent endoscopic sinus surgery or are under consideration for surgery. Of these, 4 had a complete immunologic evaluation. Male to female ratio is 2:2, average age is 10.8 years. Two patients had undergone endoscopic sinus surgery at the time of data extraction. Average Lund-Mackay score was 15. Three (75%) out of 4 individuals were found to immunoglobulin deficiencies. One individual had low IgA and IgG, with a specific deficiency in IgG antibodies to Streptococcus pneumoniae. One individual had low Haemophilus influenzae B IgG antibodies. One individual had normal immunoglobulins but was found to have hypereosinophilic syndrome. One individual had low IgM.

Conclusion

The etiology of pediatric CRS remains under investigation and there may be an increased role of immunodeficiency in its pathogenesis as compared to adults. In this pilot study of pediatric CRS patients, we observed a high prevalence of immunoglobulin deficiencies. As this sample size is small, we are expanding our review to include more data in future investigation. We aim to further characterize the diagnostic value of performing specific immunologic studies in pediatric patients with CRS in hopes to alleviate testing that is widely negative and without a clinical correlate.

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- normal; ↓ immunoglobulin deficiency; eos: eosinophils

*Patient 3 was diagnosed with hypereosinophilic syndrome

Figure 1. CT of paranasal sinuses

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