

# Immunopathologic characteristics of Chinese pediatric chronic rhinosinusitis

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## Abstract

Background: The histopathology of pediatric chronic rhinosinusitis with nasal polyps (CRSwNP) and without nasal polyps (CRSsNP) is rarely reported due to their low prevalence or the unavailability of tissue samples. Hence, we aimed to characterize and compare the histologic features and protein expression of Th1/Th2/Th17-related cytokines in pediatric CRSsNP and CRSwNP. Methods: The histologic characteristics of 15 children with CRSsNP, 52 children with CRSwNP, and 12 control participants were analyzed using hematoxylin and eosin staining. The expression of Th1/Th2/Th17-related cytokines were examined using immunohistochemistry and the enzyme-linked immunosorbent assay. Results: Pediatric subjects with CRSwNP had more intact epithelium and less submucosal mucous glands compared to those with CRSsNP. Tissue eosinophils were more prevalent in the young CRSwNP group compared to the old CRSwNP or the CRSsNP groups. The protein concentrations of Th2 cytokines were significantly higher in the CRSwNP group than the CRSsNP group or the control group. Moreover, the protein concentrations of Th17 cytokines were significantly higher in the young CRSwNP group than the old CRSwNP group or the CRSsNP and control groups. The protein concentrations of Th1 and Th17 cytokines were also significantly higher in the CRSsNP group than the control group. Compared with non-eosinophilic CRSwNP, eosinophilic CRSwNP presented with elevated protein concentrations of Th1 and Th17 cytokines. Conclusion: For the first time, we showed that pediatric CRSwNP presents as eosinophilic with Th2/Th17 inflammation, whereas CRSsNP presents as Th1/Th17 inflammation. Our study may provide a theoretical basis for the precise treatment of pediatric CRS in the future.

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