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Editorial

Establishing a Therapeutic Strategy Targeting NF-κB in Asian Patients with Chronic Rhinosinusitis With Nasal Polyps

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▸ See the article "The Role of NF-κB in Chronic Rhinosinusitis With Nasal Polyps" in volume 11 on page 806.

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Chronic rhinosinusitis with nasal polyps (CRSwNPs) is a chronic inflammatory disease within the mucosa of the nasal cavity and paranasal sinuses and is a relatively common disease with a prevalence of about 4% of the population.[1] Depending on the degree of eosinophilic infiltration into the polyp tissue, CRSwNPs can be further subdivided into an eosinophilic polyp and non-eosinophilic polyp.[1] Compared to non-eosinophilic one, the eosinophilic polyp is featured with more severer clinical manifestations, more recurrence after the surgical removal, and more frequently accompanying other allergic diseases such as allergic asthma.[2] As patients with CPSwNPs often complain of discomfort from symptoms such as nasal congestion, postnasal drip, olfactory dysfunction, and remarkably impaired quality of life, clinicians should treat these patients appropriately.[3]

As early studies of CRSwNPs have been dominated by Western nations; it has been reported that eosinophilic polyp is more predominant than a non-eosinophilic polyp. However, recent studies have demonstrated that non-eosinophilic polyp is more common in Asia, and Asian patients with CRSwNPs might have other immunological features than Western patients. Asian patients with CRSwNPs exhibit a more predominant Th1/Th17 inflammatory response than Th2 responses, which differs significantly from Caucasian patients whose dominant immunologic feature is eosinophilic airway inflammation.[4-8] Therefore, if we could identify the immunological characteristics of Asian patients compared with Western ones, we expect to establish a unique treatment strategy for Asian patients with CRSwNPs.

In the current issue of the Allergy, Asthma and Immunology Research, Jung et al.[9] aimed to investigate the potential role of nuclear factor-kappa B (NF-κB) in Asian patients with CRSwNPs. They hypothesized that activation of NF-κB would contribute to the pathophysiology of CRSwNPs by increasing the expression of various cytokines, chemokines, and adhesion molecules associated with p65. To identify these hypotheses, they included 22 CRSwNPs patients, ten patients with chronic rhinosinusitis without nasal polyps (CRSsNPs), and 14 control subjects (patients undergoing rhinologic surgery for reasons other than rhinosinusitis). They took tissue from the nasal cavity (polyp tissue for CRSwNPs patients, uncinate tissues for CRSsNPS patients and control subjects) and performed histopathologic evaluation such as hematoxylin-eosin staining and immunohistochemical staining for NF-κB p65 using these

tissues. They also performed real-time PCR analysis of inflammatory mediators that may be associated with NF-κB pathway activation such as p65, tumor necrosis factor (TNF)-α, interleukin (IL)-1β, IL-6, IL-8, eotaxin and intracellular adhesion molecule (ICAM)-1.

Histologically, about 50% (11/22 patients) of all CRSwNPs patients had a non-eosinophilic polyp. CRSwNPs patients had significantly increased NF-κB p65-positive cells compared to CRSsNPs patients and control subjects. In real-time PCR, mRNA expression of p65, IL-6, IL-8, and eotaxin was increased considerably in CRSwNPS patients compared to other groups. However, when comparing the eosinophilic polyp group with the non-eosinophilic group, they could not find a significant difference in the NF-κB p65 positive cell ratio. Also, the eosinophilic group showed no significant difference from the non-eosinophilic group in mRNA expression of p65, IL-6, IL-8, ICAM-1, TNF-α, and eotaxin. Therefore, the authors concluded that the NF-κB pathway plays an essential role in the pathophysiology of Asian CRSwNPs patients, but they also suggested that further study is needed on the specific role of NF-κB pathway for the non-eosinophilic polyp, which is the most prominent feature of Asian patients.

These findings are probably due to the relatively small number of patients involved in the study. Notably, only 11 patients were enrolled in the non-eosinophilic group and the eosinophilic group, respectively, so authors were expected to have difficulty in finding meaningful results. Also, even in the eosinophilic group, nasal polyp from Asian patients may have different immunological characteristics than those from Caucasian patients. Therefore, further large-scale studies should be conducted for patients from various countries such as Europe and the United States of America.

In conclusion, the activation of the NF-κB pathway plays a vital role in patients with CRSwNPs in the Asian population. Thus, they suggested that down-regulation of the NF-κB pathway may be a useful therapy for controlling the pathophysiology of nasal polyps. These findings will provide a new therapeutic strategy for Asian patients with CRSwNPs.

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REFERENCES

1. Fokkens WJ, Lund VJ, Mullol J, Bachert C, Alobid I, Baroody F, et al. European position paper on rhinosinusitis and nasal polyps 2012. Rhinol Suppl 2012:3 p preceding table of contents, 1-298.
PUBMED | CROSSREF
2. Lou H, Zhang N, Bachert C, Zhang L. Highlights of eosinophilic chronic rhinosinusitis with nasal polyps in definition, prognosis, and advancement. Int Forum Allergy Rhinol 2018;8:1218-25.
PUBMED | CROSSREF
3. Pawankar R. Nasal polyposis: an update: editorial review. Curr Opin Allergy Clin Immunol 2003;3:1-6.
PUBMED | CROSSREF
4. Kim JW, Hong SL, Kim YK, Lee CH, Min YG, Rhee CS. Histological and immunological features of non-eosinophilic nasal polyps. Otolaryngol Head Neck Surg 2007;137:925-30.
CROSSREF

5. Zhang N, Van Zele T, Perez-Novo C, Van Bruaene N, Holtappels G, DeRuyck N, et al. Different types of T-effector cells orchestrate mucosal inflammation in chronic sinus disease. J Allergy Clin Immunol 2008;122:961-8.
PUBMED | CROSSREF

6. Soler ZM, Mace JC, Litvack JR, Smith TL. Chronic rhinosinusitis, race, and ethnicity. Am J Rhinol Allergy 2012;26:110-6.
PUBMED | CROSSREF

7. Hao J, Pang YT, Wang DY. Diffuse mucosal inflammation in nasal polyps and adjacent middle turbinate. Otolaryngol Head Neck Surg 2006;134:267-75.
CROSSREF

8. Meltzer EO, Hamilos DL, Hadley JA, Lanza DC, Marple BF, Nicklas RA, et al. Rhinosinusitis: establishing definitions for clinical research and patient care. J Allergy Clin Immunol 2004;114:155-212.
PUBMED | CROSSREF

9. Jung HJ, Zhang YL, Kim DK, Rhee CS, Kim DY. The role of NF-κB in chronic rhinosinusitis with nasal polyps. Allergy Asthma Immunol Res 2019;11:806-17.
CROSSREF