

**ASP-American Academy of
Allergy, Asthma, and
Immunology Geriatrics
Development Initiative
Junior Faculty
Development Award**

**Award Recipient:
Seong H. Cho, MD
Northwestern University
Feinberg School of Medicine**

**Project:
“Age-Related Differences in Inflammatory
Mechanisms of Chronic Rhinosinusitis”**



Seong H. Cho, MD

Chronic rhinosinusitis (CRS) is one of the most commonly reported diseases in the United States that significantly affects the quality of life of elderly people. It is estimated that 10-16% of the adult population suffers from CRS. Despite its importance, there have been a limited number of studies on CRS in the elderly.

CRS can be defined as a persistent, symptomatic inflammation of the nasal and sinus mucosa, for at least 12 weeks, resulting from the interaction of multiple host and environmental factors. CRS is commonly divided into two subtypes: CRS with nasal polyps (CRSwNP) and CRS without nasal polyps (CRSSNP). The inflammatory response in patients with CRSSNP has been shown to be highly neutrophilic with a tendency toward polarization of T lymphocytes to T-helper1 (making interferon-gamma). In contrast, the inflammatory responses for CRSwNP are characterized by eosinophilia with a T-helper2 skewing, making interleukin 5. To date, there have been no studies investigating age-related pathogenesis in CRS; considering the relatively late onset of CRS, studies of how this disease affects older adults seem warranted.

Based on a Lund-MacKay CT score analysis, our preliminary study of over 100 patients demonstrates that CRS in elderly patients manifests as a more severe disease, with elderly patients twice as likely to develop nasal polyp and asthma compared to CRS in the non-elderly. Interestingly, eosinophilic cationic protein, a marker of eosinophilic inflammation, is significantly lower (fourfold) in elderly patients than in non-elderly CRS patients. These results indicate that CRS in the elderly manifests as a more severe disease with frequent polyp generation that may have a distinct pathogenetic mechanism. My research team has advanced new hypotheses as to the inflammatory mechanisms of CRS, proposing a dysfunction of the innate immune barrier in association with compensatory adaptive immune responses characterized by robust responses of B lymphocytes. Through the support of the ASP-American Academy of Allergy, Asthma, and Immunology (AAAAI) award, we have a unique opportunity to study age-related differences in host immune response in CRS as a companion to our National Institutes of Health sponsored studies. The aims of the ASP-AAAAI Geriatrics Development Initiative Junior Faculty Development Award are to perform: (1) retrospective and prospective studies to identify age-related differences in CRS pathogenesis; and 2) a prospective study of immunopathogenesis in CRS patients in surgical and lavage samples from elderly (60 years old and over) and non-elderly (between 20 to 40 years old) CRS patients.

During the first year of the study, my research team will prospectively collect and store surgical samples from elderly and non-elderly CRS patients. The results of the retrospective studies will be used to guide us to the markers of inflammation that are implicated as being involved in the disease in elderly patients. Through this method, we will identify the age-related differences of inflammatory changes in CRS and elaborate the mechanism of CRS in elderly patients, further contributing to their therapeutic implications.

Building on the foundation of my clinical training in allergy, immunology, and otolaryngology, the ASP-AAAAI award will enable me to further develop a research career, focusing on CRS and other allergic diseases in the elderly population.