

Endotypes of Chronic rhinosinusitis with nasal polyps

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In 1960s, chronic rhinosinusitis (CRS) or sinusitis (CS) was classified as follows: chronic hyperplastic rhinosinusitis, chronic bacterial rhinosinusitis, or chronic allergic rhinosinusitis. For the last decades, it has been globally accepted that, under the broad umbrella term CRS, CRS is further categorized into polypoid and nonpolypoid disease, based on the absence or presence of nasal polyps (CRS without nasal polyps, CRSsNP or CRS with nasal polyps, CRSwNP).

We recently identified cellular phenotypes of CRSwNP using cluster analysis and defined an algorithm for different clusters associated with polyp recurrence. Overall, 366 patients with CRSwNP were enrolled in this retrospective analysis. Eighteen variables, including clinical characteristics and tissue/peripheral inflammatory cells assessments, were selected for factor analysis. Unsupervised cluster analysis was performed after variables reduction and standardization and differences in polyp recurrence during follow-up for a minimum of 24 months were analysed among clusters. Discriminant analysis was further used to develop a clinically useful algorithm for predicting clustering.

Five phenotypic clusters were identified. Clusters 1 and 2 were plasma cell-dominant and lymphocyte-dominant phenotypes, respectively. Cluster 3 revealed a mixed inflammatory pattern. Cluster 4 was characterized by infiltration of predominantly neutrophils. Cluster 5 was characterized by a marked tissue eosinophilia and highest recurrence rate of 98.5%. The clinical algorithm predicted clustering with 93.7% accuracy.

Chinese CRSwNP patients may be classified into five phenotypes with different polyp recurrence rates, based on the presence of predominantly plasma cells, lymphocytes, neutrophils, eosinophils or mixed inflammatory cells in polyps.