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GA^{2}LEN sinusitis cohort study: chronic rhinosinusitis with nasal polyps — differentiation based on chemokine pattern

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Background: Chronic Rhinosinusitis (CRS) with (CRSwNP) and without nasal polyps (CRSsNP) are considered heterogeneous entities of CRS. Studying inflammatory cells and their mediators in clearly defined subgroups (EP3OS criteria) may lead to a better differentiation of CRS. The aim of present study was 1. to differentiate those subgroups by means of the EP3OS criteria 2. to characterize the chemokine pattern in nasal tissue of CRSs/wNP and 3. to evaluate the prevalence of IL-5 positivity and its impact on chemokine profile.
Method: There were 98 patients included in our prospective multicenter, case-control study; CRSwNP n=28, CRSsNP n=45 and 25 controls undergoing septoplasty or conchotomy. Nasal tissue homogenates were analyzed by ELISA for a range of chemokines: eotaxin, TARC, PARC, ENA-78, IP-10, MIP-1alpha, MCP-3 and for IL-5.
Result: In nasal tissue of CRSwNP patients we observed significantly elevated concentration of eotaxin, TARC, PARC, ENA-78 and IP-10, as compared to controls. Patients with CRSsNP had only elevated concentration of TARC, as compared to the control group. CRSwNP was characterized by increased concentration in tissue homogenates of eotaxin, PARC, TARC and IL-5, but not of MIP-1alpha and MCP-3 compared to CRSsNP. Nasal tissue of CRSsNP patients contained significantly more of ENA-78 and IP-10 than CRSwNP patients. IL-5 was detectable 34.1% of the CRSsNP group and in 84.6% of CRSwNP samples. IL-5 positive CRSsNP samples had a significant higher chemokine concentration for eotaxin, MIP-1alpha, PARC and TARC than IL-5- negative tissue. In IL-5 positive NP PARC was increased significantly compared with IL-5 negative NP.
Conclusion: Defining the chemokine pattern may help to characterize specific CRS entities. Cluster analysis in subgroups can lead to further understanding and classification of CRS. IL-5 appears to be a promising diagnostic marker for further typing of CRS.