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Title: Chronic rhinosinusitis and the prevalence of asthma

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Body: Background: Chronic rhinosinusitis (CRS) is a common health problem with significant medical costs and impact on general health. It is sub classified with (CRSwNP) or without (CRSsNP) nasal polyps. CRS frequently co-exist with asthma but, to date, this association remains poorly studied and unexplained. Methods: A clinical study comprising 57 patients with recalcitrant CRS and 20 control subjects scheduled for septoplasty; all were consecutively included. Allergy was assessed by skin prick test (SPT) or radioallergosorbent (RAST) test; moreover, nasal endoscopy, 14-day-twice-daily-peak-flow registration, spirometry and reversibility test was performed. In selected cases, a bronchial challenge test was carried out and/or expiratory NO (eNO) was measured. Upper as well as lower airway disease was thus clinically classified according to international guidelines. Results: Among the 57 patients, 43 and 10, respectively, had CRSwNP and CRSsNP. Four patients were difficult to classify and therefore categorized as atypical (e.g. endoscopy with a single polyp or cobblestone mucosa). Thirty patients with CRSwNP (odds ratio [OR] = 6.9 [1.8-27.9], p=0.001), 3 patients with CRSsNP (30 %), 3 with atypical CRS (75 %) and 5 control subject (25 %) had asthma. Among patients with co-existing CRSwNP and asthma, 34% were atopic which is comparable to the background population. Conclusion: In comparison with previous studies, we found a surprisingly strong association between upper and lower airway disease among patients with recalcitrant CRSwNP. We hypothesize a common pathology with identical inflammatory changes throughout the airway in CRSwNP, i.e. the united airways.