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Title: Association between upper airway diseases and bronchial asthma

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Body: Few studies investigated the association between allergic rhinitis (AR) with sinusitis (S), polyposis (P) and bronchial asthma. The aim of the study was to evaluate the associations between different upper airway diseases and bronchial asthma in the general population and their impact on asthma exacerbation. In the frame of the Gene Environment Interactions in Respiratory Diseases study (GEIRD), a postal screening questionnaire including questions about self reported symptoms of asthma, AR, S and P was administered. A random sample of subjects (n=5162) aged 20-44 years was selected in 4 Italian centres (Pavia, Sassari, Torino, Verona). The association among AR, AR plus S, AR plus S and P, and bronchial asthma was estimated by the relative risk ratio (RRR) using multinomial regression models adjusted for sex, age, smoking habits and design confounders. The prevalence of AR in the sample was 25% (95%CI: 24-26). Among subjects with AR, 73% had AR only, 22% had AR with S and 5% had AR with S and P. The risk of current asthma was higher in subjects with AR+S and AR+S+P (RRR=1.38; 95%CI:1.01-1.90 and RRR=2.16; 95%CI:1.24-3.76, respectively) than subjects with AR only. There were no statistically significant differences in the number of asthma exacerbations among the three groups. The percentage of subjects with diagnosed asthma, who were treated with drugs for asthma, was 50%, 62% and 79% in AR only, AR+S and AR+S+P respectively. In conclusion, the type of upper airway diseases seems to be a risk factor for current asthma but not for the asthma exacerbations.