Abstract Preview - Step 3/4
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Title: NOS1, NOS2A, and NOS3 genetic variants, eosinophil count, FeNO level and smoking habits according to current asthma: evidence for interactive effects in the EGEA study

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Text: Eosinophils and exhaled nitric oxide (FeNO) are markers of inflammation in asthma, FeNO level was associated with sputum eosinophils. Therefore, we investigated associations between 37 polymorphisms (SNPs) belonging to nitric oxide synthase 1 (NOS1) (n=25), NOS2A (n=5) and NOS3 (n=7) genes and blood eosinophil count and FeNO level according to current asthma, and whether smoking modified associations between SNPs and FeNO level. Association analysis was conducted in 332 families (996 adults, 459 with asthma) from the French Epidemiological study on the Genetics and Environment of Asthma.

Eosinophil count and FeNO were positively associated with asthma (geometric means: 217 vs. 148 cells/mm³ and 18.8 vs. 14.8 ppb, P< 0.0001), and were correlated whatever the asthma status (P< 0.0005). FeNO level decreased with smoking (trend P=0.001). In asthmatics, three SNPs in NOS1 (rs2293050, rs2139733, rs1483757) were associated with higher eosinophil count (P< 0.01), no association being found in non-asthmatics (PInteraction=0.01 to 0.008). Regarding FeNO level (n=508), two SNPs in NOS1 (rs816296, rs3782221) and three SNPs in NOS3 (rs1800783, rs1007311, rs743507) were associated with FeNO level in asthmatics (P< 0.04) whereas no or reversed associations were found in non-asthmatics (PInteraction=0.02 to 0.001). In ex-smokers/smokers, two SNPs in NOS2A (rs2531860, rs3730013) were associated with lower FeNO level (P< 0.003), whereas no association was found in non-smokers (PInteraction< 0.01).

Current asthma modified associations between NOS1 and eosinophil count, and between NOS1 or NOS3 and FeNO level. Smoking modified associations between NOS2A (inducible isoform) and FeNO level.