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Title: Estimating the contribution of genetic variants in occupational chronic bronchitis

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Body: We hypothesized that occupational factors might affect the relationship between genetic predisposition and the risk of chronic bronchitis. Cases were 122 workers with a confirmed diagnosis of occupational chronic bronchitis and controls were 166 healthy workers matched to cases by age, sex and industrial exposure time. 55 SNPs were genotyped by PCR-RFLP. Significant associations with occupational chronic bronchitis risk were observed with VDBP 1307C>A, 1296T>G (Padj=0.00066, OR=2.54 95%CI 1.60-4.04), MMP1 519A>G (Padj=0.0001, Pcor=0.0002, OR=2.52 95%CI 1.36-4.69), ADAM33 13491C>G (Padj=0.0004, Pcor=0.0008, OR=2.52 95%CI1.40-4.52), IL8 -251T>A (Padj=0.0058, Pcor=0.0116, OR=2.87 95%CI 1.32-6.22), NQO1 465C>T (Padj=0.0004, Pcor=0.0008, OR=3.57 95%CI 1.35-6.72), UGT2B7 2146C>T (Padj=0.0021, Pcor=0.0042, OR=2.34 95%CI 1.35-4.04), CYP1A2 -2467delT (Padj=0.0041, Pcor=0.0082, OR=2.17 95%CI 1.20-3.91). Significant interaction were found for smoking status and UGT2B7 2146C>T (P=0.015), EPHX1 415A>G (P=0.04), GPX1 599C>T (P=0.037) and for PY and CYP2F1 c.14_15insC (P=0.05) for occupational chronic bronchitis. Also significant interaction were found for age of exposure time and IL1RN VNTR (P=0.02656), VDBP 1307C>A (P=0.02258), CYP1A1 3798T>C (P=0.01657). The formation of occupational chronic bronchitis in workers is determined not only by the composition of harmful dusts and duration of exposure but also the individual characteristics of the organism. The disease occurs predominantly in individuals with certain genetic constitution and is a consequence of the interaction of genetic and environmental factors.