Airborne occupational exposure, ABO phenotype, and risk of obesity.

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Multivariate Analysis
Obesity - blood - chemically induced - etiology
Prevalence
Risk factors
Time Factors

Abstract: BACKGROUND: We have previously found a quite strong interplay between occupational airborne pollutants, ABO phenotypes, and risk of ischaemic heart disease (IHD), with long-term exposure being associated with a significantly increased risk among men with phenotype O, and not among men with other ABO phenotypes. We suggested that the biological pathway could be a stronger systemic inflammatory response in men with blood group O. Several inflammatory mediators likely to increase the risk of IHD have recently been linked also to obesity, suggesting that long-term exposure to airborne pollutants might play a role in the aetiology of obesity. Accordingly, we tested the hypothesis that long-term occupational exposure to airborne pollutants would be more strongly associated with obesity in men with phenotype O than in men with other ABO phenotypes. DESIGN: Cross-sectional exposure-response study taking into account potential confounders. SETTING: The Copenhagen Male Study. SUBJECTS: A total of 3290 men aged 53-74 y. MAIN OUTCOME MEASURE: Prevalence of obesity (BMI > or =30 (kg/m2)). RESULTS: Overall, no differences were found in the prevalence of obesity between men with the O phenotype (n=1399) and men with other phenotypes (n=1891), 8.6 and 9.0%. However, only among men with the O phenotype was long-term occupational exposure (at least 5 y of frequent exposure) to various respirable airborne pollutants: dust, asbestos, soldering fumes, welding fumes, organic solvents, fumes from lacquer, paint or varnish, toxic components, breath irritants, stench or strongly smelling products, and irritants (other than breath irritants or contagious components) associated with an increased prevalence of obesity. Statistically, the strongest univariate associations were found for asbestos exposure, welding fumes, and breath irritants. Odds ratios (95% confidence limits) for these factors were 3.7 (1.8-7.6), 2.7 (1.6-4.4), and 2.6 (1.5-4.4), respectively. This particular relationship of airborne exposures with obesity in men with phenotype O was supported in multivariate analysis including interaction terms and taking into account a number of potential confounders. In contrast, no gene-environment interactions with obesity were found with respect to ABO phenotypes and a number of nonrespirable exposures. CONCLUSION: The finding of a quite strong interplay between long-term exposure to airborne pollutants, ABO phenotypes, and risk of obesity may open up new possibilities for clarifying mechanisms underlying the global obesity epidemic.

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Indicators of cardiovascular risk among workers exposed to high intermittent levels of carbon disulphide.

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Middle Aged
Occupational Diseases - blood - chemically induced
Occupational Exposure - adverse effects
Respiratory Function Tests
Risk factors

Abstract:
The effects of exposure to carbon disulphide have been studied mostly among workers in the viscous rayon industry, where the usual exposure profile has been relatively steady exposure over work shifts. We investigated 13 workers in a small chemical company who were exposed to low levels, peaking intermittently to relatively high levels in the range of 100-200 ppm at the end of the work shift, a pattern that may change the risk profile. Our investigation was part of a compliance order that was fought by the company and our access and follow-up was limited. Two workers had burns on their bodies associated with exposure to caustic. Four had elevations in total serum cholesterol, one had elevated serum triglycerides and three had elevations in fasting blood glucose--two of them were known to be diabetics before employment and one had a history of unexplained peripheral neuropathy. No consistent pattern suggestive of a defined lipoprotein abnormality was obvious but several atherogenic profiles were observed. Five had abnormalities on electrocardiogram, four of whom appeared to be among the most heavily exposed. The presence of these changes taken together in this context may suggest accelerated atherosclerotic changes. Tests of liver and kidney function were within the normal range for all workers, as was a complete blood count. Four of the workers had evidence of a bilateral reduction in hearing threshold at 4,000 Hz. A complete set of recommendations was forwarded to the employer, emphasizing further control of exposure to carbon disulphide, personal protection requirements and a cardiovascular risk reduction programme. Conditions improved in the plant following modifications introduced in response to a stop work order from the provincial government's occupational health and safety agency. However, a fire in 1998 put the company out of business and ended further follow-up or interventions. We conclude that these findings, while difficult to interpret because of the circumstances of the investigation, are compatible with an atherogenic effect of exposure to peaking levels of carbon disulphide. The observation should be tested in a larger population with fewer confounding factors and greater control over the investigation.

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A possible connection between furnace dust exposure, plasma fibrinogen levels and cardiovascular disease.

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