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Environ Res. 2014 May;131:31-8. doi: 10.1016/j.envres.2014.02.012. Epub 2014 Mar 15.

Atherosclerotic process in taxi drivers occupationally exposed to air pollution and co-morbidities.

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Abstract

Consistent evidence has indicated that the exposure to environmental air pollution increases the risk of cardiovascular disease. This study aimed to evaluate the possible effects of occupational exposure to air pollution, especially to polycyclic aromatic hydrocarbons (PAHs), and the influence of co-morbidities on the atherosclerotic process and inflammation. For that, biomarkers of exposure such as 1-hydroxypyrene urinary, oxidative damage and markers of cardiovascular risk were determined in plasma, serum and blood. In addition, inflammation models such as carotid intima-media thickness and serum inflammatory cytokines were analyzed in 58 taxi drivers with and without co-morbidity. The results demonstrated that considering only taxi drivers without co-morbidities, 15% presented carotid intima-media thickness above reference values. For the first time it has been demonstrated that urinary 1-hydroxypyrene levels were associated with carotid intima-media thickness and with serum homocysteine levels. The multiple linear regression analysis showed that several factors may contribute to the increased carotid intima-media thickness, among which age, interleukin-6, fibrinogen and exposure to PAHs stand out. In summary, our results suggest that chronic occupational exposure to atmospheric pollution could be an additional contributor to the atherogenesis process, leading to impaired vascular health. Moreover, carotid intima-media thickness, serum homocysteine levels, fibrinogen and the total cholesterol/HDL-c ratio could be suggested as preventive measures to monitor drivers' health.

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KEYWORDS: 1-Hydroxypyrene; Carotid intima-media thickness; Inflammation; Occupational exposure

PMID: 24637182 [PubMed - indexed for MEDLINE]

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