

EXPOSURE TO ENVIRONMENTAL LEAD AFFECTS LUNG AGING OF THE GENERAL POPULATION FROM A LARGE INDUSTRIAL COMPLEX

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Background and Aims: Lead effects, even from low level exposures, have been implicated in the aging process of several organs including brain. However, effects of lead on the lung aging of general population have not been studied. This study was to ascertain the risk factors of aging on the pulmonary function (PF; forced expiratory volume in 1 second [FEV₁], forced vital capacity [FVC]) of those exposed to lead in the vicinity of industrial complex

Methods: In total, 263 men and women, aged over 30, were recruited from two cities during a 2-year follow-up. Spirometry testing was conducted at yearly cycles I and II. We estimated the change in FVC and FEV₁ during the study period and analyzed the rate of change according to the height, baseline FVC, and FEV₁, after controlling for sex, bronchial hyperresponsiveness, blood lead, urinary cotinine, and 1-hydroxyrene.

Results: The decline of PF progressed with age. More marked decline of FVC was noted for men than women ($p < 0.05$), but the decline of FEV₁ was not. Biological factors, especially height ($p < 0.05$) and pulmonary status ($p < 0.0001$), were associated with the decline of both PFs. Exposure to environmental lead was also significantly associated with the decline of both PFs

Conclusions: Even within a normal range of PF decline from aging, people with a smaller height, lower pulmonary status at baseline, and higher level of BPb were more vulnerable to the decline of PF. Lead accumulated in adult may contribute to rapid aging on pulmonary function.

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