LEAD EXPOSURE AND BLOOD PRESSURE IN AN URBAN POPULATION IN SOUTHERN BRAZIL

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Abstract: Several epidemiological and clinical studies have found a link between chronic or high levels of lead exposure and elevated blood pressure. However, there is interest in the association between blood lead levels (BLL) and blood pressure in subjects who have been environmentally exposed to lead. Exposure to low levels of lead is considered a public health issue, due to its ability to accumulate in the body for a long period of time, and also to the absence of a safe concentration in the exposure to this metal. The aim of this study is to evaluate the relationship between BLL and blood pressure in an urban population. In a cross-sectional population-based study, a total of 948 adults aged 40 years or more were randomly selected in a city in Southern Brazil. Information on socioeconomic, dietary, lifestyle and occupational background was obtained by interviews. The determination of BLL was performed by Inductively Coupled Plasma Mass Spectrometry Technique (ICP-MS) and systolic and diastolic blood pressures were measured with digital equipment Omron HEN 742 according to the standards set by VI Brazilian Guidelines on Hypertension. The geometric means (95% CI) for men and women were 2.59 µg/dL (2.46-2.73 µg/dL) and 1.58 µg/dL (1.51-1.65 µg/dL), respectively. Statistically significant differences were found among BLL and sex (p<0.001), age (p=0.001), occupation (p<0.001), alcohol consumption (p<0.001), smoking (p<0.001), high-density lipoprotein (p=0.003), body mass index (p=0.004), systolic blood pressure (<0.001) and diastolic blood pressure (<0.001). Blood lead was a consistent predictor of both systolic and diastolic blood pressures in model adjusted for sex, race, age, income, education, body mass index, smoke, alcohol consumption, triglycerides, glycemia, total cholesterol, blood lead levels and antihypertensive medication use. In conclusion, low-level lead exposure was associated to changes in arterial blood pressure.

Keywords: lead, blood, adult, environmental, systolic blood pressure, diastolic blood pressure

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