RELATIONSHIP BETWEEN BLOOD MANGANESE AND BLOOD PRESSURE IN THE KOREAN GENERAL POPULATION ACCORDING TO KNHANES 2008

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Background and Aims: Human studies on the relationship between blood pressure and Mn overload are limited or conflicting, and those studies have been performed on a small scale. We present data on the association of manganese (Mn) level with hypertension in a representative sample of the adult Korean population who participated in the Korean National Health and Nutrition Examination Survey (KNHANES) 2008.

Methods: This study was based on data obtained by KNHANES 2008, which was conducted for three years (2007–2009) using a rolling sampling design involving a complex, stratified, multistage, probability-cluster survey of a representative sample of the noninstitutionalized civilian population of South Korea.

Results: Multiple regression analysis after controlling for covariates, including gender, age, regional area, education level, smoking, drinking status, hemoglobin, and serum creatinine, showed that the beta coefficients of log blood Mn were 3.514, 1.878, and 2.517 for diastolic blood pressure, and 3.593, 2.449, and 2.440 for systolic blood pressure in female, male, and all participants, respectively. Multiple regression analysis including three other blood metals, lead, mercury, and cadmium, revealed no significant effects of the three metals on blood pressure and showed no effect on the association between blood Mn and blood pressure. In addition, doubling the blood Mn increased the risk of hypertension 1.828, 1.573, and 1.567 fold in women, men, and all participants, respectively, after adjustment for covariates. The addition of blood lead, mercury, and cadmium as covariates did not affect the association between blood Mn and the prevalence of hypertension.

Conclusion: Blood Mn level was associated with an increased risk of hypertension in a representative sample of the Korean adult population.