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gium.

Project Title:

Urinary Cadmium and Lead Excretion and Their Relation to Smoking and Blood Pressure in a Population With Low Exposure.

Principal Investigators:

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Objective:

To determine urinary excretion of cadmium (Cd) and lead (Pb) in a random sample of households in a small Belgian town; investigate whether significant and independent associations can be found with smoking and blood pressure.

Methods or Approach:

A 4 percent random sample of all households in the town was identified. Blood pressure and anthropometric characteristics were measured on two separate occasions. A self-administered questionnaire was used to quantify tobacco consumption. Both 24-hour and spot urine tests were obtained for analysis.

Results to Date:

Urinary Cd (U-Cd) averaged 2.4 nmol/24 hours in 46 youths. U-Cd increased with age and was significantly higher in 57 adult men than in 59 women (9.3 nmol vs. 7.2 nmol/24 hours, $p < 0.01$). Urinary Pb (U-Pb) averaged 28 nmol/24 hours in youths and increased with age. Adult men excreted more Pb than women (64.0 nmol vs. 40.0 nmol/24 hours, $p < 0.001$). Among men, manual workers excreted more Cd than office workers (12.6 nmol vs. 7.5 nmol/24 hours, $p < 0.05$), but excreted a similar amount of Pb (62.0 nmol vs. 61.0 nmol/24 hours). After adjusting for sex and age, U-Cd and U-Pb were not related to body weight or cigarette consumption. In simple regression analysis, U-Cd was positively correlated with both systolic ($r = +0.30$, $p < 0.05$) and diastolic ($+0.38$, < 0.01) blood pressure in women. However, after adjusting for other contributing variables, a weak but negative relationship became apparent between systolic pressure and U-Cd in women ($t = -2.21$, $p = 0.033$) and between diastolic pressure and U-Cd in men ($t = -2.04$, $p = 0.047$). U-Pb did not contribute to blood pressure variability in any of the sex-age groups.

Future Plans:

Results will be compared with other areas in Belgium where environmental exposure to cadmium is greater.

Project Dates:

September 1980-continuing.

Financial Support:

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Reference:

Staessen, J.; Bulpitt, C.J.; Roels, H., et al. "Urinary Cadmium and Lead Concentrations and Their Relation to Blood Pressure in a Population With Low Exposure." *British Journal of Industrial Medicine* 41:241-248, 1984.