

EFFECT OF POLY-AROMATIC HYDROCARBONS ON CARDIOVASCULAR AND OXIDATIVE STRESS MARKERS IN ELDERLY KOREANS

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Background and Aims: Some researches have shown the effect of PAHs exposure on cardiovascular and oxidative stress markers in occupational settings. We aimed to evaluate this relationship among elderly in community exposure levels in a panel study.

Methods: Repeated measurements of blood pressure, SDNN, urinary 1-hydroxypyrene, 2-naphthol and malondealdehyde(MDA) were taken from 509 Korean individuals over 60 years old residing in Seongbuk-gu, Seoul, from August 2008 to August 2010.

Mixed model analysis was used to investigate the relationship between log-transformed urinary 1-hydroxypyrene, 2-naphthol levels with systolic and diastolic blood pressure, SDNN, urinary MDA levels. Selected adjustment variables were age, sex, body mass index and cotinine levels (model 1) or all the variables in model 1 plus temperature, humidity and amount of sunshine in Seongbuk area on the day each subject visited for measurements.

Results: Mean values of log-transformed 1-hydroxypyrene and 2-naphthol levels were $-2.315 \pm 1.2674 \mu\text{g/g crt}$ and $1.817 \pm 1.1266 \mu\text{g/g crt}$, and mean levels of systolic and diastolic blood pressure were $127.8 \pm 16.47 \text{mmHg}$ and $71.9 \pm 10.04 \text{mmHg}$. Mean SDNN was $3.2 \pm 0.54 \text{ms}^2$, and mean urinary MDA level was $0.47 \pm 0.492 \mu\text{g/g crt}$. Significant associations were found between urinary 1-hydroxypyrene levels with systolic blood pressure(model 1: estimate=0.8207, p-value=0.0011; model 2: estimate=0.5373, p-value=0.0313), diastolic blood pressure(model 1: estimate=0.8345, p-value<0.0001; model 2: estimate=0.6262, p-value<0.0001), SDNN(model 1: estimate=-0.7302, p-value=0.033; model 2: estimate=-0.749, p-value=0.0304) and MDA levels(model 1: estimate=0.0535, p-value<0.0001; model 2: estimate=0.05249, p-value<0.0001). Urinary 2-naphthol also showed significant associations with systolic blood pressure(model 1: estimate=0.7677, p-value=0.0133; model 2: estimate=0.5938, p-value=0.0513), diastolic blood pressure(model 1: estimate=0.5167, p-value=0.0072; model 2: estimate=0.3989, p-value=0.0337) and MDA levels(model 1: estimate=0.07543, p-value<0.001; model 2: estimate=0.07555, p-value<0.001), but not with SDNN(model 1: estimate=0.2096, p-value=0.6167; model 2: estimate=0.1972, p-value=0.6389).

Conclusions: Urinary 1-hydroxypyrene and 2-naphthol levels are significantly associated with cardiovascular and oxidative stress markers, systolic and diastolic blood pressures, SDNN and urinary MDA levels in elderly Koreans.

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