Cadmium, Hypertension and Smoking

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Dear Sir,

There has been some controversy regarding the nature and importance of the effect of cadmium on hypertension in both humans and experimental animals [1-3]. Besides, the association between elevated blood cadmium and smoking habits is widely accepted [4]. In order to determine the relationship of cadmium to human hypertension and smoking habits in a limited number of the subjects in our population, we measured serum levels of cadmium in 105 patients with essential hypertension (43 female, 62 male, with a mean age of 44) and in 47 age, sex and smoking status matched healthy controls (20 female, 27 male, with a mean age of 44). Determination of serum cadmium was done by atomic absorption spectrometry, using the graphite furnace technique.

Figure 1 shows that the most remarkable result of our study is the significant serum cadmium elevation in the smokers compared to the nonsmokers either in the hypertensives or in the controls ($p < 0.001$). Also, no evidence exists for excessive cadmium intake by environmental exposure or dietary habits, thus, smoking can be regarded as the main source of cadmium in these subjects. Total amount of the cigarettes consumed (cigarettes per year plus number of smoking years) showed a good correlation with serum cadmium levels in both groups ($p < 0.05$). Regarding the mean serum cadmium levels, we did not detect any differ-

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Smokers

Nonsmokers

Fig. 1. Serum cadmium levels in hypertensives (■) and control (□) subjects. ence between the smokers in the hypertensives and the ones in the controls (hypertensives 4.41 ± 1.4 ng/ml, normotensive controls 4.38 ± 1.4 ng/ml (mean $\pm$ SD), $p > 0.05$). In addition, no correlation was found between serum levels of cadmium with blood pressure in the hypertensive patients ($p > 0.05$).

In conclusion, we could not demonstrate a relationship between serum cadmium levels and hypertension like most other studies [5]. One possible explanation can be the relative insensitivity of the serum levels of cadmium in the assessment of total body cadmium exposure. It might be better if it was possible to measure tissue levels. But the results of the studies of postmortem human data are also conflicting. Some investigators have shown elevated levels [3] whereas the others found no significant differences [6]. We believe that more detailed epidemiological studies are needed to clarify this problem.

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0028-2766/92/

0601-0116\$2.75/0