

## **Influence of the level of selected heavy metals on overall survival in lung cancer.**

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### **Background**

Heavy metals are the elements to which we are continuously exposed in our environment through air, food and soil. Their effects of living organisms have been widely studied in recent decades. In this research we want to find whether heavy metals like arsenic, cadmium, mercury and lead could be valuable biomarker for the prognosis of lung cancer.

### **Materials and Methods**

We carried out a prospective study of 336 patients with lung cancer in Szczecin, Poland. Concentrations of arsenic, cadmium, mercury and lead in the blood were measured at the time of diagnosis, before treatment. All patients were followed maximum up to 96 months or until death. Vital status data was received from the Polish National Death Registry.

### **Results**

In the Cox proportional hazards analysis performed for all individuals with lung cancer, the hazard ratio for death from all cause was 0.99 (95% CI 0.66 to 1.48, P=0.94) for arsenic, 1.37 (95% CI 0.89 to 2.10, P=0.15) for cadmium, 1.55 (95% CI 1.03 to 2.34, P=0.04) for mercury and 1.18 (95% CI 0.76 to 1.82, P=0.47) for lead for patients in the lowest quartile, compared with those in the highest quartile of heavy metals concentration. A similar analysis was performed separately for each clinical stage of LuCa and the most interesting results were observed for the stage IA of the LuCa for cadmium. Among the patients with stage IA of the lung cancer this relationship was statistically significant (HR 3.06; P=0.02) for cadmium level in the highest quartile (2.06 – 7.77 µg/L) compared to quartile 3 (1.11 – 1.97 µg/L, reference).

### **Conclusion**

These results suggest that in patients undergoing treatment with stage IA of lung cancer, blood cadmium level below 1.47 µg/L may be associated with improved overall survival.