A case-control study of the relation between plasma selenium and asthma in European populations: a GAL2EN project


BACKGROUND: There is evidence that selenium levels are relatively low in Europe and may be falling. Low levels of selenium or low activity of some of the enzymes dependent on selenium have been associated with asthma.

METHODS: The GA(2)LEN network has organized a multicentre case-control study in Europe to assess the relation of plasma selenium to asthma. The network compared 569 cases in 14 European centres with a diagnosis of asthma and reporting asthma symptoms in the last 12 months with 576 controls from the same centres with no diagnosis of asthma and no asthmatic symptoms in the last 12 months. RESULTS: All cases and controls were selected from the same population defined by age and place of residence. Mean plasma selenium concentrations among the controls ranged from 116.3 microg/l in Palermo to 67.7 microg/l in Vienna and 56.1 microg/l among the children in Oslo. Random effects meta-analysis of the results from the centres showed no overall association between asthma and plasma selenium [odds ratio (OR)/10 microg/l increase in plasma selenium: 1.04; 95% confidence interval (CI): 0.89-1.21] though there was a significantly protective effect in Lodz (OR: 0.48; 95% CI: 0.29-0.78) and a marginally significant adverse effect in Amsterdam (OR: 1.68; 95% CI: 0.98-2.90) and Ghent (OR: 1.35; 95% CI: 1.03-1.77).

CONCLUSION: This study does not support a role for selenium in protection against asthma, but effect modification and confounding cannot be ruled out.