

Ingested inorganic arsenic and prevalence of diabetes-mellitus

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摘要

Abstract

To examine the association between ingested inorganic arsenic and prevalence of diabetes mellitus, in 1988, the authors studied 891 adults residing in villages in southern Taiwan where arseniasis is hyperendemic. The status of diabetes mellitus was determined by an oral glucose tolerance test and a history of diabetes regularly treated with sulfonylurea or insulin. The cumulative arsenic exposure in parts per million-years was calculated from the detailed history of residential addresses and duration of drinking artesian well water obtained through standardized interviews based on a structured questionnaire and the arsenic concentration in well water. The body mass index was derived from body height and weight measured according to a standard protocol, while the physical activity at work was also obtained by questionnaire interviews. Residents in villages where the chronic arseniasis was hyperendemic had a twofold increase in age- and sex-adjusted prevalence of diabetes mellitus compared with residents in Taipei City and the Taiwan area. There was a dose-response relation between cumulative arsenic exposure and prevalence of diabetes mellitus. The relation remained significant after adjustment for age, sex, body mass index, and activity level at work by a multiple logistic regression analysis giving a multivariate-adjusted odds ratio of 6.61 and 10.05, respectively, for those who had a cumulative arsenic exposure of 0.1-15.0 and greater than 15.0 ppm-year compared with those who were unexposed. These results suggest the chronic arsenic exposure may induce diabetes mellitus in humans.