

The effects of chronic arsenic exposure from drinking water on the neurobehavioral development in adolescence

邱弘毅

Tsai SY;Chiou HY;The HW;Chen CM and Chen CJ

Abstract

This cross-sectional study examined the possible influence on the development of cognitive function among adolescents due to long-term arsenic exposure. Forty-nine junior school students drinking arsenic-containing well water and 60 controls matched with age, sex, education, body height, body weight, body mass index, and socioeconomic status were compared. The former was divided into two groups: high and low exposure, with mean cumulative arsenic levels of 520629.0 ± 605824.2 and 13782.2 ± 12886.0 ppm, respectively. Four neurobehavioral tests including continuous performance test (CPT), symbol digit (SD), pattern memory (PM) and switching attention (SA) were applied. A strong correlation between age and education caused collinearity in the multiple regression model ($r = 0.84$, $P < 0.0001$). Only education and sex, excluding age, were entered into the model as covariates. Pattern memory and switching attention were significantly affected by long-term cumulative exposure to arsenic after adjusting for education and sex. It is suggested that the arsenic levels in the well water may be monitored extensively, but if there is no intervention, then neurobehavioral function will not be protected. Limitations of the current study require replication of this effect in other studies to confirm this conclusion.