

Plasma-transforming growth factor-alpha expression in residents of an arseniasis area in Taiwan

邱弘毅

Hsu KH;Brandt-Rauf P;Lin TM;Chiou HY;Tseng CH;Chen CJ;Luo CJ

Abstract

Epidemiological studies have demonstrated an association between long-term exposure to inorganic arsenic and the related adverse effects such as cancers, skin lesions, and vascular diseases. Although several hypotheses have been proposed for the mechanism of arsenic-induced pathogenesis, it remains imperfectly understood. Recent studies have suggested that alterations in growth signal transduction pathways, particularly involving transforming growth factor-alpha (TGF-alpha), may be important. Immunoassays were used to determine the plasma levels of TGF-alpha and epidermal growth factor receptor (EGFR), which is the receptor for TGF-alpha, in residents of an arseniasis area of Taiwan in relation to their estimated cumulative arsenic exposure from drinking water. No relationship between arsenic exposure and EGFR was found. However, among the high cumulative exposure group (>6 ppm-years), levels of plasma TGF-alpha (25.5+/-38.2 pg ml⁻¹) and the proportion of individuals with TGF-alpha over-expression (29.4%) were significantly higher ($p < 0.05$) than normal, healthy unexposed controls (8.1+/-5.6 pg ml⁻¹, 8.6%, respectively). There was a significant linear trend between cumulative arsenic exposure and the prevalence of plasma TGF-alpha over-expression after adjusting for age and sex ($p = 0.019$). The results suggest that plasma TGF-alpha expression may be a useful biomarker when detecting adverse effects on arsenic exposed population.