

# **Biological Gradient Between Long-Term Arsenic Exposure and Carotid Atherosclerosis**

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## **Abstract**

We studied 199 male and 264 female adult residents from the southwestern area of endemic arseniasis in Taiwan. The extent of carotid atherosclerosis was assessed by duplex ultrasonography. Diabetes mellitus was determined by oral glucose tolerance test, hypertension by mercury sphygmomanometers, and serum lipid profiles by autoanalyzers. Information regarding the consumption of high-arsenic artesian well water, cigarette smoking, and alcohol consumption was obtained through standardized questionnaire interviews. Logistic regression analysis was used to estimate the odds ratio and its 95% CI of carotid atherosclerosis for various risk factors. Three indices of long-term exposure to ingested arsenic, including the duration of consuming artesian well water, the average arsenic concentration in consumed artesian well water, and cumulative arsenic exposure, were all significantly associated with prevalence of carotid atherosclerosis in a dose-response relationship. The biological gradient remained significant after adjustment for age, sex, hypertension, diabetes mellitus, cigarette smoking, alcohol consumption, waist-to-hip ratio, and serum levels of total cholesterol and LDL cholesterol. The multivariate-adjusted odds ratio was 3.1 (95% CI 1.3 to 7.4) for those who had a cumulative arsenic exposure of 20 mg/L-years compared with those without exposure to arsenic from drinking artesian well water.