Toenail Arsenic Levels among Residents in Amami-Oshima Island, Japan

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In order to evaluate the current arsenic exposure status and its determinants in Japan, we collected toenail samples from 212 subjects residing in a town with a population of 6,900 in Amami-Oshima Island in August 1999. We measured arsenic concentrations of the toenails using inductively coupled plasma mass spectrometry. In addition, we examined the association of arsenic levels with lifestyles and dietary habits, including the consumption of fish, seaweed, and rice. The mean toenail arsenic level was 0.41 ppm (95% confidence interval, 0.36–0.47), which was about 3-fold higher than those observed in other populations of mainland Kagoshima. Arsenic levels were elevated among current smokers (mean = 0.65; 95% confidence interval, 0.32–1.29) when compared with non-smokers (mean = 0.40; 95% confidence interval, 0.34–0.46), and among the residents consuming 4 bowls or more, of rice every day (mean = 1.97; 95% confidence interval, 0.25–15.75) when compared to residents consuming 3 bowls or less (mean = 0.39; 95% confidence interval, 0.34–0.45). Sex, age, alcohol intake, fish consumption, or seaweed consumption was not associated with toenail arsenic concentration. Further studies seem warranted to examine the cause of relatively high arsenic levels in our study area.

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