

# PAST ARSENIC EXPOSURE, ARSENICAL SKIN LESIONS AND ABNORMALITY OF LUNG FUNCTION IN SOUTHWESTERN TAIWAN

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**Background and Aims:** Several epidemiological studies have shown the association of artesian water consumption with respiratory symptoms and decreased lung function. The purpose of this study was to examine the association of past arsenic exposure from drinking water with lung function after 15-year cessation of contaminated water ingestion.

**Methods:** The study subjects were recruited from the arseniasis area with arsenic level in deep-well water as high as 0.79-0.93 mg/L in Southwestern Taiwan. A total of 787 subjects participated in community health examinations during 1991-1993. Lung function was measured with a portable spirometer by skilled technicians and skin lesions were clinically diagnosed by experienced physicians.

**Results:** Among male smokers with either hyperkeratosis or skin cancers (Bowen's disease, squamous cell carcinoma, basal cell carcinoma), the average adjusted forced expiratory volume in 1 second (FEV1) was reduced by 237.6 ml (95%CI, 50.0-425.2,  $p=0.01$ ) but forced vital capacity (FVC) was not significantly reduced (adjusted mean of reduction: 297.7ml, 95%CI, -101.9-297.4,  $p=0.34$ ). Male nonsmokers with or without arsenical skin lesions were not associated with decreased lung function. Female nonsmokers with hyperkeratosis and/or skin cancers were associated with reduced FEV1 (adjusted mean of reduction: 134.7ml, 95%CI, 21.2-248.1,  $p=0.02$ ) but not with FVC. Dose-response relationship of arsenic exposure with decreased FEV1 as well FEV1/FVC was shown in male smokers and female (FEV1 mean of reduction: 36.1 ml and 194.3ml among the groups of cumulative As exposure (CAE) 0.1-19.9 and 20+, respectively in male smokers; 116.7 ml and 146.1 ml among CAE 0.1-19.9 and 20+, respectively in female).

**Conclusions:** Markedly interaction of cigarette smoking with arsenical skin lesions was observed to significantly decrease FEV1 and FEV1/FVC among male. Among non-smokers, female with hyperkeratoses and/or skin cancers was more susceptible to As-induced pulmonary effects than male. After 15-year cessation of contaminated water ingestion, dose-response relation of arsenic exposure with decreased lung function could still be observed in male smokers and female.

## References:

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