Chromium-induced skin damage among Taiwanese cement workers

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Abstract
Little research has been done on the relationships between chromium exposure, skin barrier function, and other hygienic habits in cement workers. Our purpose was to investigate chromium-induced skin barrier disruption due to cement exposure among cement workers. One hundred and eight cement workers were recruited in this study. Urinary chromium concentration was used to characterize exposure levels. The biological exposure index was used to separate high and low chromium exposure. Transpidermal water loss (TEWL) was used to assess the skin barrier function. TEWL was significantly increased in workers with high chromium exposure levels than those with low chromium exposure levels ($p = 0.048$). A positive correlation was also found between urinary chromium concentration and TEWL ($R = 0.28$, $p = 0.004$). After adjusting for smoking status and glove use, a significant correlation between urinary chromium concentrations and TEWL remained. Moreover, workers who smoked and had a high chromium exposure had significantly increased TEWL compared to nonsmokers with low chromium exposure ($p = 0.01$). Skin barrier function of cement workers may have been disrupted by chromium in cement, and smoking might significantly enhance such skin barrier perturbation with chromium exposure. Decreased chromium skin exposure and smoking cessation should be encouraged at work.

Cement workers chromun exposure skin barrier function smoking transpidermal water loss