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A case-control study of the risk of cutaneous melanoma associated with three selenium exposure indicators

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ABSTRACT

Aims and background. A direct association between exposure to the metalloid selenium and risk of cutaneous melanoma has been suggested by some observational and experimental cohort studies, whereas other studies have yielded inconsistent results. Since some of the inconsistencies may be due to exposure misclassification arising from the use of exposure indicators that do not adequately reflect body tissue selenium content or the levels of the biologically relevant species of this metalloid, we examined this issue using multiple indicators of exposure.

Methods. We analyzed the relation of selenium exposure with risk of cutaneous melanoma using two different biomarkers, plasma and toenail selenium concentration, and estimated dietary selenium intake in a population-based case-control series (54 cases, 56 controls) from an Italian community.

Results. In unmatched and matched logistic regression models as well as nonparametric generalized additive models, higher plasma selenium levels were strongly associated with excess disease risk. In contrast, toenail and dietary selenium exhibited little relation with melanoma risk. The pattern of correlation among indicators of exposure differed by disease status, with dietary intake associated with plasma selenium levels in patients but not in controls.

Conclusions. Our data showed that different selenium exposure indicators can yield different inferences about melanoma risk. Although the series was small, our results are consistent with a positive association between circulating levels of selenium and melanoma risk. Further investigation of the exposure classification performance of various selenium biomarkers and of metabolic patterns of the metalloid and of its speciation are needed to help elucidate the relation between selenium exposure and human health.

Key words: case-control study, diet, melanoma, plasma, risk, selenium, toenails.

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