BMC Proceedings

ORAL PRESENTATION Open Access

Polychlorinated biphenyls (PCB), UV radiation, and cutaneous malignant melanoma

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From 16th International Charles Heidelberger Symposium on Cancer Research
Coimbra, Portugal. 26–28 September 2010

Several older epidemiologic studies have suggested that exposure to polychlorinated biphenyls (PCBs) may increase risk of cutaneous malignant melanoma (CMM). These investigations, however, have not been able to control for sun exposure, and sun sensitivity, which are major risk factors for this cancer. We conducted a pilot study to examine the possible association between plasma levels of PCBs and risk of CMM, controlling for sun exposure and sun sensitivity.

Our case-control study compared levels of 14 PCB congeners in the plasma of 80 Caucasian CMM patients, and 310 Caucasian controls frequency matched by age group and gender. Assays were conducted using gas chromatography and values were lipid-adjusted. Data concerning sun exposure history, sun sensitivity, and host pigmentation variables such as skin, eye and hair colour were also collected using standardized questionnaires. Odds ratios and 95% confidence intervals were calculated for total PCBs, dioxin-like and non-dioxin like PCBs, as well as individual congeners using unconditional logistic regression.

A strong association was seen between melanoma risk and plasma levels of total PCBs, (OR highest quartile: 6.02; 95% CI = 2.00-18.17); non-dioxin-like PCBs (OR highest quartile: 7.02; 95%CI = 2.30-21.43); and many of the single congeners. These associations persisted after adjustment for recreational sun exposure, sun sensitivity and pigmentation factors.

Although the study results will require independent confirmation in larger case-control or cohort investigations, they suggest that potential environmental factors other than UV radiation may be involved in melanoma.

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Published: 24 September 2010

doi:
Cite this article as: Gallagher *et al.*: Polychlorinated biphenyls (PCB), UV radiation, and cutaneous malignant melanoma. *BMC Proceedings* 2010 **4** (Suppl 2):O4.