

## Primary Malignancy in Patients with Nonmelanoma Skin Cancer—Letter

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The recent article by Ong and colleagues (1) reported that in England, those diagnosed with nonmelanoma skin cancer (NMSC) had a significantly increased risk of many types of internal cancers. This finding is in contrast with the finding in a previous article (2). In that article, the effects of smoking were incorporated into the analysis. It was noted in ref. (1) that the effects of body mass index, smoking, and ultraviolet (UV) exposure were not included in the analysis. In addition to smoking, diet plays an important role in the risk of many types of cancer. Dietary fat is evidently a risk factor for NMSC (3). A recent multicounty ecological study found smoking and/or diets with higher animal products and/or alcoholic beverage consumption significantly associated with most of the cancers listed in Table 2 of ref. 1 (4).

There are several reasons why the effect of UV irradiance might increase the risk of NMSC without affecting the risk of internal cancers. One is that in England, temperatures are generally low so that people generally cover most of the body surface area. Because vitamin D production is proportional to the amount of skin area exposed

to UVB, vitamin D production may be low but UV irradiance on the face and arms may be high enough to cause NMSC. A second reason is that UVA (320–400 nm) can cause basal cell carcinoma without generating vitamin D. A third is that people are very conscious of the risk of NMSC from UV irradiance, so are more prone now to use sunscreen and minimize UV irradiance. In ref. 2, the years of NMSC diagnosis were from 1956 to 2000 with mid-points ranging from 1971 to 1985. There was less concern about the risk of NMSC from solar UV irradiance in those periods. An ecological study of cancer mortality rates in California found that NMSC mortality rates were significantly inversely correlated with eight types of internal cancer for males for the period 1950 to 1964 but there were no inverse correlations after that period (5). There were also no significant inverse correlations between NMSC and internal cancers for females.

Thus, the authors of ref. 1 are correct that diagnosis of NMSC for those living in England indicates increased risk of many other types of cancer. However, their study does not rule out that UVB irradiance, through production of vitamin D, can also reduce the risk of internal cancers.

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### References

1. Ong ELH, Goldacre R, Hoang U, Sinclair R, Goldacre M. Subsequent primary malignancies in patients with nonmelanoma skin cancer in England: a national record-linkage study. *Cancer Epidemiol Biomarkers Prev* 2014;23:490–8.
2. Grant WB. A meta-analysis of second cancers after a diagnosis of nonmelanoma skin cancer: additional evidence that solar ultraviolet-B irradiance reduces the risk of internal cancers. *J Steroid Biochem Mol* 2007;103:668–74.
3. McNaughton SA, Marks GC, Green AC. Role of dietary factors in the development of basal cell cancer and squamous cell cancer of the skin. *Cancer Epidemiol Biomarkers Prev* 2005;14:1596–607.
4. Grant WB. A multicountry ecological study of cancer incidence rates in 2008 with respect to various risk-modifying factors. *Nutrients* 2013;6:163–89.
5. Grant WB. An ecological study of cancer mortality rates in California, 1950–64, with respect to solar UVB and smoking indices. *Dermatoendocrinol* 2012;4:176–82.