Reviewer’s report

Title: Mortality in cancer patients with a history of squamous cell carcinoma - a nationwide population-based cohort study

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Reviewer: Nabil Saba

Reviewer’s report:

In this report Johannesdottir et al perform a nationwide population-based study looking at associations between having a history of SCC and the prognosis from having a second index malignancy namely NHL, lung, colorectal, breast or prostate cancer. Eventhough the analysis and results do indicate that patients with a known diagnosis of SCC appear to have a worse prognosis it is rather difficult to attribute these findings to a particular factor such as an immune suppressed state. There is also little information provided to the reader about the primary sites and stages of the SCC and the status of these tumors at the time of diagnosis of the index malignancy which makes the results difficult to interpret.

Even though there has been links between immunosuppression and the occurrence and prognosis of patients with SCC of the skin there is no clear evidence that patients with SCC in general are more likely to have an overall immune suppressed state. Rather such a state increases the risk of SCC notably of certain types such as skin SCC.

In addition, the risk of developing these index cancers is influenced by a host of factors including genetic environmental and others such as field cancerization at least in the case of lung cancer. We agree with the author’s statement on page 4 that focusing on patients with known immunosupression state such as HIV and organ transplant would be more helpful in answering questions specific to immune suppression as a key factor in affecting outcome.

How do the authors account for the fact that field cancerization in patients with known SCC increases the risk of having other aero digestive malignancies namely SCC of the lung? The occurrence of lung cancer in these patients is probably linked to exposure to known carcinogens and probably has little to do with an immune compromised state.

Finally, it would be helpful if the authors elaborated on the reasoning behind their choice of index cancers as there is no clear evidence that these particular types of cancers with the exception of lymphoma and lung cancer are more likely to occur in patients with an immune suppressed state compared to other cancers.

Level of interest: An article of limited interest

Quality of written English: Acceptable
**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests