Reviewer’s report

Title: Genetic analysis of the vitamin D receptor gene in two epithelial cancers: melanoma and breast cancer

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Reviewer: Victoria Stevens

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This study investigates the association of SNPs in the vitamin D receptor (VDR) gene with breast cancer and melanoma using two case-control populations from Spain. One significant association was found for breast cancer while none were found for melanoma. Investigations into associations with clinical, personal and tumor characteristics revealed a few significant findings of questionable meaning.

In general, this study was well conducted but the results are somewhat over interpreted. Only one SNP was significantly associated with breast cancer in the multivariate analysis. Given the large number of comparisons done (at least 8 for Table 2 and 61 for Table 3), this result and the subgroup investigation are likely to be due to chance. Other criticisms of the manuscript are detailed below.

1. The background section included before the introduction is not necessary.
2. Similarly, the first paragraph of the results and discussion section, which provides additional introduction, is also not needed.
3. The controls for the melanoma cases were frequency matched by sex and age. Was this done for the breast cancer cases? If not, why not?
4. Supplemental table 2 is incorrectly labeled as table 1.
5. Three of the four SNPs are commonly studied and are well known (for better or worse) by researchers in the field as Fok1, Taq1, and Bgl1. To facilitate the comparison to previous findings, these names should be used throughout the manuscript.
6. The bold used to indicate the significant findings in Tables 2 and 3 is not evident.
7. The association of rs731236 with breast cancer is not longer statistically significant after adjustment for covariates. This should be acknowledged in the text.
8. It is not clear whether the ORs shown in Table 3 are the result of adjusted or unadjusted analyses/ This should be clarified. Additionally, what the reference group for each of these analyses is should be specified.

Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests.