Reviewer’s report

Title: Dynamics of Vitamin D in Stable Patients with Inflammatory Bowel Disease and their Families

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Reviewer: Dorothy Hausman

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This quasi case-control study attempted to determine whether family vitamin D status posed an additional risk for vitamin D status in stable IBD patients. Serum vitamin D levels (25(OH) vitamin D) and vitamin D and calcium intakes and several potential confounders of vitamin status were examined in IBD patients and controls and their respective family members. Contrary to the proposed hypothesis, the study did not find a difference in vitamin D levels between the patients and controls, or an impact of ‘intrafamilial vitamin D dynamics’ on vitamin D status. These findings, along with several concerns about study design and presentation dampen enthusiasm for this report.

Major concerns:

Demographics: It is mentioned that ‘controls were profiled to resemble patients with respect to age, sex, ethnicity and weight’. Race, which is known to influence vitamin D status, was not included in this list. Study results a significant difference in race between the IBD patients (94% Caucasian) and controls (79%) and higher serum 25(OH)D levels in Caucasians. The authors mention that removal of non-Caucasians did not significantly change the outcome (serum vitamin D status) between the two groups of patients. But, could this explain the apparently higher vitamin D status of the patient family group?

Missing data: There appears to be considerable missing data in this study – listed as up to 20% for ‘smoking’ and in the range of 10-40% for other variables known to influence vitamin D status such as tanning salon use and vacation in sunny climates. It is unclear how such missing data was treated in the statistical analysis. Further, the ‘n’ for the various groups changes depending on the comparisons made, making it extremely difficult to get a clear picture of the study results.

Disease state: Although the study is reported to be conducted in stable IBD patients, mild disease activity was reported 19% of the Crohn’s patients. It is unclear whether these individuals were examined individually, or if/how the disease status influenced the study outcome.

Statistics – In general, the statistical analyses are not well described and do not appear to match the study objectives. For example, the authors proposed to describe differences in serum vitamin D and vitamin D and calcium intake across ‘the four study groups’, yet the primary statistical test used was the student T
which allows comparison of only 2 groups. Further in some instances it is hinted that frequencies (i.e. vitamin D distributions) differed across the four groups, but means of testing was not indicated. Additional detail should also be included with regard to the models used for regression analysis.

Other comments/suggestions:

Pg 4, 2nd P The meaning of the 1st sentence is unclear. CD and UC are thought to be ‘leading contenders’ of what?

Pg 5, 1st P The 1st sentence is poorly worded and does not properly represent the results of the cited study which found prolonged breast feeding, less sunshine exposure and lower vitamin D supplementation in the rachitic children.

Pg 5, line 10 ‘levels’ is misspelled

Pg 6, 3rd P BMI is an abbreviation for ‘body mass index’, not basal metabolic index

(and elsewhere)

Pg 10, 1st P The following abbreviations/acronyms have been defined: HBI, SCCAI, 5ASA

Pg 11, line 8 The suggestion that those taking supplemental vitamin D have intakes which ‘approaches levels above daily recommendations’ seems unnecessarily alarming. Intake levels of those taking supplements are in the range of ~1100 – 1350 IU. Although higher than the RDA, these do not approach the tolerable upper limit (UL) for vitamin D of 4000 IU for children > 9 yrs. and adults.

Pg 11, line 11 Suggest changing to ‘the effect of vitamin D supplementation and season on serum vitamin D……

Pg 11, last P The correlation between total intake and serum vitamin D across all groups was not significant. The description of the results is hard to follow and adds little to the paper. Suggest deleting this paragraph.

Pg 12, line 15 The p-value for patients indicated here is ‘p<0.03’, but indicated as p=0.003 in the figure legend.

Pg 13, 2nd P It is indicated that ‘there was a higher level of vitamin D’ between Jewish and non-Jewish patients. Based on the values presented, it is assumed that the reference is to serum 25(OH) vitamin D levels. Here and elsewhere in the manuscript this terminology should be used where appropriate in lieu of the less specific ‘vitamin D levels’. Further, while it is mentioned that the ‘vitamin D’ levels are higher in Jewish vs. non-Jewish patients, no indication of significance of the finding is indicated. If not statistically significant, suggest deleting the paragraph.

Table 1a/b Although some of the parameters/data reported in Table 1a would be pertinent to only the patients (disease activity, disease site, medical, surgical
history), I nonetheless suggest combining Tables 1a and 1b. This would allow ease of comparison between patients vs. family members and patients vs. healthy controls.

- The percentage of UC patients sampled in less sunny months appears to be incorrect.
- Also suggest including % vitamin D supplement use in the table.

Table 2 Some of the information accompanying the table (table heading) seems more appropriated for the results section. The units for serum Vit D (actually 25(OH)D) are not given. Suggest spelling out ‘Mean’ in column 2, rather than using ‘µ’ which is confusing.

Table 3 The set-up of the table is a bit confusing. It would seem more logical to list dietary vitamin D intake first, followed by total vitamin D intake, and then the two subgroups of total intake +/- supplemental vitamin D. As in, it is not at first obvious that the third and fourth sets of data represent subgroups (particularly since the ‘n’ of the two groups does not always match up with the ‘n’ for total vitamin D intake. Further there is no indication of significance in the table, although the text mentions that the total intake was doubled with supplementation. Was that result significant?

Table 4 The title and table heading does not fully or accurately represent the data presented. The table appears to present the effect of supplement use or season on serum 25(OH)D – not the effects of vitamin D intake. Further, significant differences, if any, are not indicated. Also, suggest deleting data on vacation.

Quality of written English: Not suitable for publication unless extensively edited

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