Reviewer's report

Title: Increases in summer serum 25-hydroxyvitamin D (25OHD) concentrations in elderly subjects in Sao Paulo, Brazil vary with age, gender and ethnicity

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Reviewer: Denise von Muhlen

Reviewer's report:

The authors discuss results of a prospective study of vitamin D and PTH levels during winter and summer among elderly residents of São Paulo, Brazil. The study has a simple design and was done properly.

Comments:

1. Several previous studies, summarized in a recent ecologic meta-regression analysis of 394 studies, have shown that vitamin D status globally depend on age, gender and skin color (see Hagenau and coll. Global vitamin D levels in relation to age, gender, skin pigmentation and latitude: An ecologic meta-regression analysis. Osteoporos Int. 2009:20:133-40). The current study is original in that presents data collected in Brazil.

I expected to see a more comprehensive discussion on the mechanisms for the already known association between 25(OH)D levels with age, gender and skin color. The vitamin D endocrine system is the only steroid endocrine system that is limited by substrate availability due to latitude, lifestyle and race. Blacks have the same capacity as Caucasians to produce vitamin D3 but require a much larger dose of ultraviolet radiation (see Holick MF. The photobiology of Vitamin D and its consequences for humans. Ann N Y Acad Sci 1985: 453:1-13)

Obesity and percent body fat were also found to have a major and independent influence on serum 25(OH)D in several studies.

2. The authors refer to the study participants as “patients”. I would recommend that they change it to “participants”

3. The study was conducted in June/December of 2002 --- it is not clear why it is being submitted only 8 years later.

4. What was the variation in the temperature between summer and winter? Would participants use more skin coverage in the winter?

5. Not clear why collect PTH and CTX on refrigerated tubes.

6. Statistical analysis section: The comparison was between 2 measures, one in the winter and another in the summer. I believe the authors meant to say that anova was used for the comparisons, and not ANOVA for repeated measures, which is design to compare more than 2 measurements.

7. It seems that none of the analyses presented was adjusted for known confounders including age, body weight or BMI, and presence of co morbidities.
Were all the participants healthy?

8. It is well known that Brazilians are one of the most interethnic admixture populations in the world. The authors refer to a 60 white and 12 black individuals, without explaining how the ethnic classification was carried (self-identification? visual inspection?). This is a major issue and needs clarification. The authors correctly noted that the miscegenation index in Brazil is high in the Discussion.

9. The results section is quite confusing.

9.1. 2nd paragraph “No differences in 25(OH)D concentrations...between groups separated by differences in calcium ingestion”.

The data presented is incomplete. How many participants consumed more/less than 500 mg/day? Why did the authors choose this cut point for calcium consumption?

9.2. Sun blockers use is mentioned but not categorized properly. What kind of sun blocker? How much of it? Did the women use sun block in the winter as well? Would that be necessary? How much sun during winter?

9.3. “No correlations were found for 25(OH)D and the other variables” - please describe which “other variables” were examined.

9.4. 5th Paragraph “As for PTH, only white individuals and natives presented a significant decrease in the winter and in the summer (p<0.001 and p=0.027, respectively.” How could that be possible? There are only 2 measures and one comparison, values cannot decrease in both winter and summer.

9.5. The final paragraph at page 8 is hard to understand. Was the comparison tested with a stratified analysis (sun blocker status)? or was it a comparison tested in a model adjusted for sun blocker use? How many participants used sun blockers? Comparisons are meaningless without sample sizes.

10. The Discussion is too long and repetitive

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

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests