Reviewer's report

Title: Does vitamin D3 play a significant role in type 2 diabetes?

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Reviewer: OHK-HYUN RYU

Reviewer's report:

Summary: Vitamin D deficiency is prevalent in T2DM and non-diabetic subjects in India, but vitamin D has no role in hemoglobin glycation and insulin resistance.

Major Strength: There was no significant association between hemoglobin glycation (and insulin resistance) and vitamin D. This study results are inconsistent with previous observational studies.

Major Weakness:

#1. This study is an observational, cross-sectional study. This study just investigated the relationship between diabetes and vitamin D deficiency.

#2. This study did not investigate the lifestyle factors, such as outdoor physical activity and diet, which influence on vitamin D levels, hemoglobin glycation, and insulin resistance. The authors have to add the lifestyle data at least in T2DM subjects.

Comments

#1. The title of the study (Does vitamin D3 play a significant role in type 2 diabetes?) is not clear.

#2. The term vitamin D and vitamin D3 was so confused. If your laboratory separately quantitated circulating 25(OH)D2 and 25(OH)D3 individually, you can use the vitamin D3. But your laboratory couldn’t separate D2 and D3, you have to use the term vitamin D.

#3. In the section of materials and methods, are there any reason to include the plasma glucose levels ≥126mg/dl in the inclusion criteria of diabetic subjects. The study results might be influenced by this inclusion criteria.

#4. In the regression analysis (Fig 1 and Fig 2), the graph was displayed separately into vitamin D deficient group and non-deficient group. Recheck the regression results without subdivision of vitamin D status (deficient vs non-deficient) in each group (T2DM and control subjects). Is there any change in the study result?

#5. In the conclusion section, the authors summarized their study finding that “its relationship in glycation control or insulin resistance in T2DM subjects could not be confirmed in our population.” In the regression analysis between vitamin D levels and glycation in non-deficient T2DM subjects, P value is 0.045. It meant that there were marginal significant relationship between vitamin D levels and
glycation in non-deficient T2DM subjects. I recommend the additional data for the lifestyle between vitamin D non-deficient and deficient T2DM subjects in the baseline characteristics of subjects.

Minor comments
#1. In the discussion section, recheck the unit of UV index?
#2. In the discussion section, “ further confirming this, Kampmann et al. and Witham et al. showed that improvement in vitamin D status may rise insulin secretion but improve insulin resistance and HbA1c in patients with T2DM.” The meaning is inconsistent with your findings. So the sentence should be changed to “but it did not improve”…………

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

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'