

COMMENTS AND RESPONSES

Association of Vitamin D With Insulin Resistance and β -Cell Dysfunction in Subjects at Risk for Type 2 Diabetes

Comment to Kayaniyil et al.

We read with interest the article by Kayaniyil et al. (1) that supplied elegant data suggesting that 25-hydroxyvitamin D [25(OH)D] is related to insulin resistance and β -cell function in a large population at high risk for type 2 diabetes and/or metabolic syndrome, thus concluding that 25(OH)D may be an independent risk factor for diabetes. We have, however, some concerns.

First, the studied population was mainly composed of obese subjects (the mean BMI was 30.5 kg/m²). Clearly, within a population with such a high BMI, the major variable influencing insulin sensitivity is fat mass. An increased fat mass (within the same BMI) could determine both the reduced insulin sensitivity and 25(OH)D. The two variables therefore correlate, but are not causally related. In our recently published article (2), we approached this important question by comparing two groups of obese subjects matched by BMI but different in terms of insulin sensitivity: no differences in

25(OH)D concentrations could be found, suggesting that the adipose tissue is its reservoir. Kayaniyil et al. themselves reported a weaker correlation in their obese (BMI >30 kg/m²) subpopulation but, unfortunately, they did not provide data on body composition.

Second, although the correlation within the high risk (for diabetes) population is intriguing, a control population is missing. In particular, it is not reported whether the studied population has lower 25(OH)D concentration than an hypothetical control cohort. If this was not the case, the working hypothesis fails. How could normal 25(OH)D determine insulin resistance?

Third, if 25(OH)D is involved in the pathogenesis of type 2 diabetes, one would expect that a supplementation of calcitriol or its analogues would ameliorate the glucose metabolism. This was not the case either in insulin-resistant diabetic patients (3) or in healthy subjects (4).

As we (2) and others (5) reported, 25(OH)D concentration mainly reflects body fat mass; the reduction of fat mass, rather than vitamin D supplementation, is the main road for the prevention and treatment of insulin resistance and diabetes.

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