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Attenuated PTH responsiveness to vitamin D deficiency among patients with type-2 diabetes and chronic hyperglycemia

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Vitamin D deficiency and diabetes represent two of the most common metabolic health problems in the world. Although the association between diabetes and vitamin D deficiency has been proved, it is still unclear whether it is a cause and effect relationship or if vitamin D deficiency is merely a consequence of obesity. Since hypovitaminosis D causes a compensatory increase in the secretion of PTH, calcium levels usually remain within the normal limits. Several factors have been demonstrated to modify the serum PTH response to low circulating 25(OH) vitamin D. In this cross-sectional study, we showed that chronic hyperglycemia is associated with a lower parathyroid hormone level among patients with vitamin D deficiency and type-2 diabetes without causing any significant changes in calcium levels. In contrast, regression analysis did not show a significant association between fasting plasma glucose and the responsiveness of PTH to vitamin D deficiency. Our data showed that there is a significant association between PTH level and the interaction (the product) of HbA1c and 25(OH) vitamin D. Interestingly, the chronic hyperglycemia associated attenuation of PTH secretion was only seen among subjects (males and females) who are older than 50 years of age. The following model predicts PTH level for subjects who are older than 50 years of age: PTH=34: 153-0: 680 VitD-2: 523 HbA1c.%.; p<0:003.

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