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

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Aim: The short and long-term relationship between hyperglycemia and PTH level among patients suffering from both diabetes type-2 and vitamin D deficiency were evaluated.

Method: This was a cross sectional study performed at Dubai Diabetes Center, UAE. To demonstrate the relationship between hyperglycemia and PTH level, subjects with type-2 diabetes and vitamin D deficiency (124 adults) were divided into 4 groups based on their FPG and HbA1c levels.

Results: Mean vitamin D and PTH levels among subjects with HbA1c \leq 7% (53 mmol/mol) were 14.05 ng/ml and 19.51 pg/ml, respectively. On the other hand, mean vitamin D and PTH levels among subjects with HbA1c \geq 10% (86 mmol/mol) were significantly lower at 11.77 ng/ml and 17.75 pg/ml, respectively. The product of vitamin D and PTH among subjects with an HbA1c \leq 7% (53 mmol/mol) was 250.380, compared with only 197.710 among subjects with HbA1c \geq 10 (86 mmol/mol). Regression analysis for subjects older than 50 years shows a significant negative effect of HbA1c on the PTH level. Mean calcium level among subjects with HbA1c \leq 7% (53 mmol/mol) was 8.80 mg/dl compared with 8.94 mg/dl when HbA1c is \geq 10% (86 mmol/mol) with no statistical difference. Although high FPG was associated with a lower PTH level, such association was not statistically significant.

Conclusion: Chronic hyperglycemia, as assessed by A1C level, is associated with a significantly attenuated PTH responsiveness to vitamin D deficiency without a significant change in calcium level. On the other hand, there was no significant association between FPG and PTH level.

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