

Interrelationship between the Status of Vitamin- D and HbA1c in Type 2 Diabetes Mellitus in a Tertiary Care Center.

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Abstract

Background: The highest prevalence rates of T2DM are found in developing countries. Type 2 diabetes mellitus (T2DM) is a serious and growing global health problem. In 2013, there were 382 million people with diabetes; this number is estimated to grow to 592 million by 2035. **Subjects and Methods:** It's a cross-sectional analytical study done in the Department of Biochemistry, VIMSAR, Burla. 100 known type-2 diabetic patients who gave consent to take part in the study were included as study subjects. **Results:** In our study the serum vitamin-D was correlated negatively with the HbA1C and the vitamin D deficiency was significantly associated with the glycaemic control. **Conclusion:** The association of vitamin D deficiency with poor glycaemic control in patients with type-2 DM points towards the role vitamin supplementation could possibly play in regulation of glycaemia in these patients.

Keywords: Type 2 Diabetes Mellitus, Vitamin D and HbA1c.

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Introduction

Type 2 diabetes mellitus (T2DM) is a serious and growing global health problem. In 2013, there were 382 million people with diabetes; this number is estimated to grow to 592 million by 2035¹.

The highest prevalence rates of T2DM are found in developing countries.^[1]

Hypovitaminosis D is an emerging health problem that affects approximately one billion people worldwide and might be increasing in frequency.^[2,3]

Vitamin D is an important hormone for mineral homeostasis and bone integrity but also has several pleiotropic effects outside the skeleton, including the endocrine system.^[4]

Recent evidence suggests that hypovitaminosis D is common in patients with type 2 diabetes mellitus.^[5]

Aim and Objective:

The aim of the study was to find the inter-relationship between the vitamin-D levels and the glycaemic control in type2 diabetic patients.

Subjects and Methods

It's a cross-sectional analytical study done in the Department of Biochemistry, VIMSAR, Burla.

Selection of Study Subjects:

Inclusion Criteria:

100 known type-2 diabetic patients who gave consent to take part in the study were included as study subjects.

Exclusion Criteria:

- Non-Diabetic persons
- Patients with liver and renal failure.
- Patients who were critically ill.

Methodology:

- Fasting blood glucose and post prandial blood glucose were measured by full automatic chemistry analyser Cobas Integra 400 (Roche)
- HbA1C was measured by Mispas3 (Agappe)
- Vitamin-D was estimated by AIA360 (Tosoh)
- Statistical analyses were done by SPSS-20 software.

Results

Table 1: Biochemical parameters of the study subjects.

Variables	MEAN ± SD
AGE	49.01 ± 3.55
FBS(mg/dl)	152.48 ± 24.33
PPBS(mg/dl)	205.22±47.81
HbA1C	8.76 ± 1.76
VITAMIN-D(ng/dl)	20.79 ± 8.39

Table 2: Vit-D levels in good and bad glycemic control group.

VITAMIN-D (ng/dl)	HbA1C(<7%)	HbA1C(>7%)
>30ng/dl	4	12
20-30ng/dl	8	32
<20ng/dl	7	37

Table3: Correlation of Vit-D with other parameters.

	r value
Vitamin-D and HbA1C	-0.646
Vitamin-D and FBS	-0.443
Vitamin -D and PPBS	-0.653

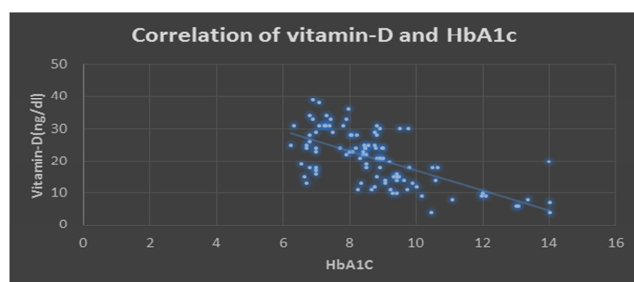


Figure 1: Correlation of Vitamin-D and HbA1c

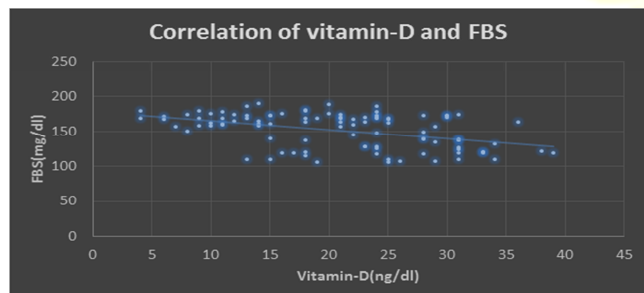


Figure 2: Correlation of Vitamin-D and FBS

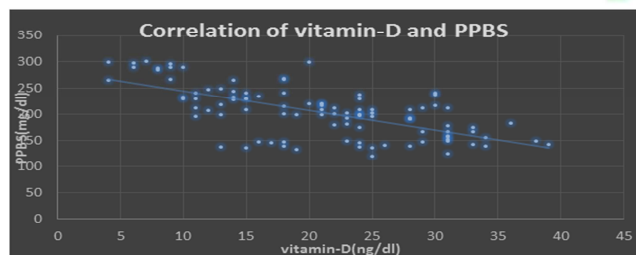


Figure 3: Correlation of Vitamin-D and PPBS

Discussion

Recently deficiency of vitamin D has been found to be a

risk factor for type 2 diabetes mellitus.^[6-9]

In our study the serum vitamin-D was correlated negatively with the HbA1C and the vitamin D deficiency was significantly associated with the glycemic control. These findings was supported by the study done by Al-Timimiet. Al.^[10]

These findings was in contrary to the study done by SerdarOlt,^[11] in his study he showed there is no association of vitamin-D with the glycemic control.

The vitamin-D was correlated negatively with HbA1C, fasting blood glucose and post prandial blood glucose.

Conclusion

The association of vitamin D deficiency with poor glycaemic control in patients with type-2 DM points towards the role vitamin supplementation could possibly play in regulation of glycaemia in these patients

The limitation of the study was that the correlation between HbA1c and vitamin D levels after giving vitamin D supplements was not undertaken.

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