STUDY OF PREVALENCE OF SEVERE 25-HYDROXY VITAMIN D DEFICIENCY IN THE MAJORITY OF PATIENTS WITH DIABETES IN BABYLON PROVINCE, IRAQ

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Abstract

Diabetes mellitus considered as one of the main chronic diseases, which causes many complications in the human body, one of these is vitamin D deficiency. For this reason, we conducted a field study to investigate the prevalence of vitamin D deficiency in patients with DM. The study was conducted randomly on 120 male patients with DM between age (20 to 70) For the period February 2018 to October 2018. Serum concentration of 25 (OH) D , HbA1c and fast blood glucose was measured. The VDD was found to be 60.8% in patients with DM. There was negative relation between vitamin D and HbA1c. VDD was a significant independent predictor of diabetic we concluded that VDD is highly prevalent in people with DM.

Key words: diabetes mellitus, vitamin D deficiency (VDD)

Introduction

Diabetes (DM) is a very common and widespread metabolic disease and represents. A critical load on the patient's life and human services costs (WHO, 2016).

Diabetes is distinguishes by the occurrence of an imbalance in the pancreas in the β cells, as well as with respect to insulin resistance. Mortality rates due to complications in the small and large blood vessels (Shaw *et al*., 2010). Vitamin D receptors are found in the cells of the pancreas, which has create a relationship that links between vitamin D to the regulation of insulin secretion (Chagas *et al*., 2010). It is assumed that there is an inverse relationship between vitamin D and HbA1C and many studies have proven that low levels exist vitamin D is associated with an increased incidence of diabetes (Pittas *et al.*, 2012), other research has shown that there is a negative connection between levels of vitamin D and HbA1c in patients with DM, including patients in various parts of the world (Zghebi *et al.*, 2017; Meo, 2016). In addition, it has been observed that lower levels of 25-hydroxy vitamin D is an independent predictor index of HbA1c in patients with DM (Sheth *et al.*, 2015). Studies in animal models have demonstrated that low exposure

to sunlight, as well as low vitamin D levels and low vitamin D consumption, have a significant effect in increasing DM infection (Driver *et al.*, 2008).

Materials and Methods

Study design

This examination was completed in the privet lab of Babylon region from February 2018 to October 2018 in the wake of acquiring the endorsement of the Morals Advisory group. The diabetic patients were chosen arbitrarily and assessed for Fasting Blood Glucose, Vitamin D levels and HbA1c. They were separated into three subgroups:

Group I: Forty samples were chosen for healthy individuals with no diabetic and HbA1c levels < 6%.

Group II: Forty samples were chosen with DM history individuals of more than five years and HbA1c levels ≥ 7%.

Group III: Forty samples were chosen with DM history individuals of more than five years and HbA1c levels ≥ 8%.

Inclusion and exclusion criteria

Patients with DM who were older than 20 years of

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age to 70 years. Individuals on vitamin D supplements, women and individuals with other disease were excluded.

Samples collection

The samples were collected by selecting random samples and make interviews with patients by a specialist doctor. Throughout the interview, the duration of diabetes and the type of diabetes medication were known. Blood tests were along these lines acquired from the members to quantify serum 25-hydroxyvitamin D, fasting blood glucose and HbA1c levels. For the patients, they were not inspected unless 10 hours of fasting passed then 5 ml of venous blood was gathered under aseptic conditions. The blood test was promptly moved to fluoride vial for Plasma Glucose estimation and EDTA vials for different parameters.

Results

There were 120 male patients and healthy participate in this study table 1. The percentage smokers was 53.7% but the nonsmokers was 46.2%. The non-obese was 49% but obese 31% respectively. Diabetic medications with Metformin 31%, Insulin injections 25% and with no medications 24% respectively.

Table 1: Showing the characteristics of the study population.

Clinical characteristic	variable	%
Smokers	43	53.7
Non smokers	37	46.2
BMI		
Non-obese	61.2	49
Obese	38.7	31
Diabetic medications		
Metformin	38.7	31
Insulin injections	31.2	25
No medications	30	24

Table 2: Showing the clinical Categories of parameters represented by 11.2 in Good glycemic control, 22.5 in Moderate glycemic control and 66.2 in poor glycemic control. also table showing that Serum Vitamin 13.7% in normal levels ,21.2 in(20.1-29.9) finally,65% in < 20ng/ml.

Categories of parameters Clinical		
Percen-tage %	Num-ber	FBG Category
11.2	9	Good glycemic control
22.5	18	Moderate glycemic control)
66.2	53	poor glycemic control
Serum Vitamin D		
13.7	11	≥ 30ng/ml (Normal levels)
21.2	17	20.1-29.9 (Vitamin D insufficiency)
65	52	< 20ng/ml (Vitamin D deficiency)

Table 3: Showing laboratory tests of the study population represented by levels of both Vitamin D and FBG in different groups.

FBG (mg/dl) (mean ±SD)	Vitamin D levels (ng/ml(mean ±SD)	groups
1.067±17.25	44.2±7.3	Group I
1.96±10.65*	28.05±4.46*	Group II
2.67±34±57*	14.5±5.02C*	Group III

Significant *Values expressed as Mean ± SD, P value < 0.05 was considered.

Discussion

Diabetes is one of the diseases that have direct and indirect health effects on human health and cause a clear burden on health revenues. It also causes long and short-term side effects in the mental and physical health of the affected patients. (Creber *et al.*, 2017) The health effects of the disease are: retinopathy, nerve weakness, kidney disease, delayed wound healing. This study demonstrated the prevalence of vitamin D deficiency in patients with diabetes clearly in Babylon province. This study determined the prevalence of vitamin D in patients with diabetes, as it compared the results of the patients with those who enjoy normal health.

The deficiency of vitamin D is linked to a clear association with the prevalence of depression in diabetic patients. Likewise, the lack of vitamin D had a direct role in disturbance of insulin resistance (Marriott, 1997), which led to the development of diabetes, Moreover, vitamin D deficiency is associated with poor control of diabetes and vitamin D supplementation may help control diabetes better in these patients (Iqbal *et al.*, 2016). Research has indicated (Tahrani *et al.*, 2010) that there is an inverse relationship between Vitamin D and HbA1c, which confirms that vitamin D has important role in glucose balance along with its important role in insulin secretion, as well as its direct role in insulin resistance and the indirect role via calcium (Borissova *et al.*, 2003).

Conclusions

The current study has proven that there is a direct relationship between the level of vitamin D and diabetes patients, especially those who suffer from poor glycemic control a comparison with healthy people. As a diabetic patient who is not under control is more likely to have physical complications, we can concluded that vitamin D supplementation may be reduce the incidence of diabetes or its side effects.

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