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Serum Calcium and Vitamin D Levels in Type 2 Diabetes Mellitus

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ABSTRACT

Individuals with T2DM do not experience this increase in b-cell mass, in fact there is a significant decrease in b cell mass. In addition to a decrease in b-cell mass, there is a 41% decrease (p<0.05) in relative b-cell volume. Individuals with T2DM when compared to their lean non diabetic counterparts, which can be partially explained by the increase in b-cell apoptosis that is also observed in individuals with T2DM. Finding suggests that b-cell apoptosis may be more pronounced in individuals with T2DM partly due to an increase in caspase-3 activity, and that it may contribute to the decrease in b-cell mass observed in this study- . The targeting of beta cell function early in the pathogenesis of T2DM is considered a critical intervention for the prevention of the diseases. It was also observed that the T2DM individuals with a vitamin D insufficiency showed a poor glycaemic control.

Key words: Glycemia, B cells, Apoptosis.

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INTRODUCTION

Pathogenesis of T2DM diabetes is involves the interaction of genetic and environmental factors. People with T2DM are reported to have many abnormalities. Hence there is a necessity to identify modifiable risk factors. Evidences from the previous studies say that calcium and vitamin D are such factors, when modified may control the diseases. Hence this study was done to estimate the serum calcium and vitamin D levels in T2DM and compare the values with non-diabetic samples [1-5].

METHODOLOGY

5ml of blood was collected from patients with T2DM Plasma glucose levels was estimated by GOD-POD method (glucose oxidase -peroxidase method).Vit D levels were estimated by ELIZA method. Serum calcium was determined by Arsenazo method. Serum calcium was determined by Arsenazo method with the case controls.

RESULTS

Figure 1 shows the HbAl c, Plasma blood glucose levels, serum calcium, and vitamin D values among Diabetics and Non Diabetics. A p value of <0.01 was considered to be highly significant and was obtained for all parameters. A negative trend was seen between HbAlc and serum calcium in non-diabetics and between plasma blood glucose levels and vitamin D in non-diabetics. A positive trend was seen between plasma blood glucose levels and serum calcium in non-diabetics and also between vitamin D and serum calcium in none. From the results it was confirmed that a negative correlation was seen between plasma blood glucose levels and vitamin D in diabetics.

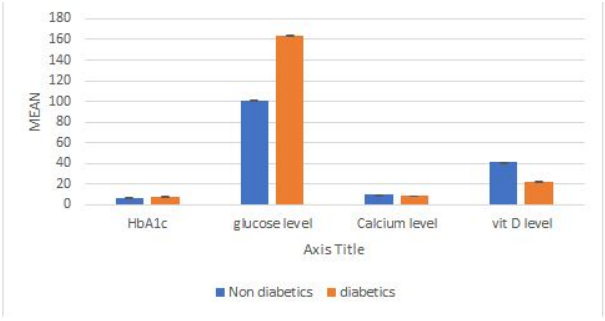

Figure 1: Blood parameters level.

DISCUSSION AND CONCLUSION

A negative correlation was seen between serum calcium, vitamin D levels and plasma blood glucose levels. A mcrease in plasma blood glucose levels was associated with decrease in serum calcium and vitamin D levels. Various studies had proved that vitamin D deficiency impairs the glucose mediated insulin secretion in our body. But the condition is restored when its supplemented. In this study A negative correlation was seen among serum calcium, vitamin D levels and HbA1c that is low serum calcium and vitamin D levels was associated with higher HbA1c [6-10].

Hence it was concluded from the study that supplementation of calcium along with vitamin D can prove to be a very cost effective and effective measure to control blood glucose levels in diabetics along with other measures such as exercise and oral hypoglycaemic.

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