ABSTRACT

TITLE: “ZINC AND MAGNESIUM LEVEL AND ITS ASSOCIATION WITH GLYCATED HEMOGLOBIN IN TYPE 2 DM” – A CROSS SECTIONAL STUDY

Degree for which submitted : Doctor of Medicine (M.D) in Biochemistry.

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BACKGROUND:

Today Diabetes Mellitus is a major health problem worldwide. The disease characterized by chronic hyperglycemia due to various causes. Of the various causes environmental genetic play an important role. Hypomagnesaemia occurs due to increased frequency in Type 2 DM. A relationship has been noted between trace elements and DM. The complication of DM is associated with increased metabolic process and oxidative stress. The trace elements like Zinc and magnesium are important co factors in these events.

AIM:

The study was designed to estimate the serum zinc & magnesium level & its association with glycated hemoglobin (HbA1c) in patients with Type 2 DM and healthy controls.
MATERIALS AND METHODS:

The study included 50 patients of Type 2 DM cases and 50 healthy controls without any complications of DM. Fasting venous blood sample was analyzed for blood sugar, serum zinc, serum magnesium and glycated hemoglobin. HbA1c was estimated by HPLC method in D10 analyzer. Zinc was analyzed by AAS in PerkinElmer 300 AA. Serum magnesium was analyzed by calorimetric kit method. Statistical analysis was done using Student ‘t’ test. Pearson’s correlation between the study variables was performed to establish the association serum magnesium with HbA1c and serum zinc with HbA1c.

RESULTS:

There was a significant decrease in serum concentration of magnesium in cases when compared to controls (1.56±0.46, 2.0±0.56) (p<0.001). HbA1c was significantly high in cases when compared to controls (8.52±2.14, 5.44±0.40) (p< 0.001). Serum zinc level was not significant between cases and controls and its P value is 0.714. There is a negative correlation between S. Magnesium and HbA1c r = -0.56. There was no correlation between S. Zinc and HbA1c r = 0.047.

CONCLUSION:

We conclude that serum Magnesium levels are only altered in type 2 DM and not serum zinc levels because we have not included the diabetic complication patients. Since DM was one of the cause for hypomagnesaemia, there was definitely an association was found between serum Magnesium and HbA1c. Magnesium supplementation to the diabetic patients will have a better glycemic control which in turn will prevent the complication and progression of the disease. Also analysis of serum zinc and serum magnesium levels should be included as a part of the screening procedure in detecting the complication of diabetes mellitus.

KEY WORDS: Diabetes Mellitus, Zinc, Magnesium, Glycated Hemoglobin.