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COMPARISON OF SERUM HOMOCYSTEINE LEVEL IN METFORMIN VERSUS GLIBENCLAMIDE TREATED TYPE 2 DM PATIENTS

Gholam Hossein Ranjbar Omrani, Omid Bazargan Lari, Ali Reza Mehdizadeh, Najaf Zare, Nika Saadat

Abstract:

Background: Diabetes mellitus is the most common cause of renal failure, blindness, non-traumatic amputation and neuropathy. Homocysteine, a sulfurated amino acid, has a close correlation with Methionine and Cysteine. The conversion of Methionine to Homocysteine and Cysteine is required coenzymes like vitamin B6, B12 and Folate. The effect of Metformin on serum Homocysteine level by decreasing vitamin B12 level in patients with type 2 diabetes mellitus was described previously. Methods: This is a prospective clinical trial study among patients with type 2 diabetes mellitus in Shiraz. 76 patients were divided into two groups (38 patients in each group). First group treated with Metformin 500-2000 mg/day and the second group treated with Glibenclamide 5-20 mg/day with follow up period of at least 6 months. Hb and MCV were used in follow up to detect megaloblastic anemia, indicator of B12 and folate deficiency. Fasting plasma Homocysteine level Hb A1C and blood sugar were measured in baseline and at 3 and 6 months follow up periods. Results: There was no significant difference between age, sex, weight, height and BMI and baseline serum profile between the two groups. Homocysteine level increased significantly in Metformin group at 3 and 6 months ($P=0.003$ and 0.001 respectively). Mean plasma homocysteine level after 6 months were $10.98 \pm 0.58 \mu\text{mol/l}$ in Metformin and $10.0 \pm 0.88 \mu\text{mol/l}$ in Glibenclamide group, with significant difference between the two groups ($P=0.001$). Conclusion: Metformin increases the plasma Homocysteine level. Metformin will accumulate highly in gastrointestinal wall and cause malabsorption of vitamin B12, therefore we can conclude that the use of Metformin for 6 months can cause vitamin B12 malabsorption and increase in plasma homocysteine level. Increase in plasma homocysteine level was 7.54% in our study that is higher in comparing to the other studies. It can be explained by longer duration of Metformin therapy in our study. Rising in Homocysteine levels may have detrimental effect on vessels that need further study.

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