Effect of hyperglycemia on inflammatory markers in patients with Type 2 Diabetes

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Background: Diabetes mellitus has reached epidemic proportions and affects more than 170 million individuals worldwide. Global estimates for the year 2010 predict a further growth of almost 50%. In recent past, role of inflammation in causation of both Diabetes and its complications has gained acceptance. Initially, hyperglycemia was thought to be the factor causing inflammation, but recently, obesity has gained attraction as probable cause of inflammation.

Objective: The objective of this study was to assess the levels of markers of inflammation in Diabetic patients, with uncontrolled hyperglycemia, before and after treatment with Oral hypoglycemic agents or insulin.

Materials and Methods: Blood samples were collected from 30 Type 2 Diabetes patients presenting to J.N.M.C.H. endocrinology O.P.D. Also, age matched controls were taken from healthy volunteers. Voluntary informed consent was taken from all study subjects for participation in the study. Samples were taken before treatment, after 24 weeks and after 48 weeks of treatment. Levels of TNF- α and IL-6 were assessed in sera using ELISA.

Results: The levels of TNF- α and IL-6 were elevated in diabetic patients and were significantly reduced after treatment. While in diabetic individuals, TNF- α was 40 fold higher than healthy volunteers, IL-6 levels were 13 fold higher. After 24 weeks of treatment, there was 2.5 fold decrease in levels of both TNF- α and IL-6. After 48 weeks of treatment, while TNF- α levels showed a 7 fold reduction, IL-6 levels were reduced by 5 fold.

Conclusion: Thus, the results indicate that hyperglycemia significantly causes increase in inflammatory markers like TNF- α and IL-6, which further contribute to pathogenesis of Diabetes mellitus type 2 as well as its complications such as atherosclerosis and neuropathy.

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