Assessment of zinc and copper levels in diabetes mellitus

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Statement of the Problem: The associations of serum zinc, copper and Zn/Cu ratio with clinical/biochemical characteristics in both types of diabetic patients were explored in this study.

Methodology & Theoretical Orientation: Serum levels of zinc and copper were measured by atomic absorption spectrophotometer in 26 type 1 and 80 type 2 diabetic patients, along with 205 age/gender-matched healthy controls.

Findings: Significantly decreased levels of Zn and Zn/Cu ratio were observed in both types of diabetic patients compared to controls, more clearly in type 1 (p<0.001). Positive and significant correlations between Zn and age (r=0.460, p<0.001), Zn and BMI (r=0.344, p<0.001), Zn/Cu and total cholesterol (r=0.207, p=0.033), and Zn and the number of coronary risk factors (Spearman’s r=0.311, p=0.001) were found. No significant relationship between Zn, Cu and Zn/Cu ratios with other biochemical parameters including HbA1c and in terms of family history, smoking, medications, micro vascular and macrovascular complications was found in both types of diabetic patients.

Conclusion & Significance: Alterations of trace elements have been reported to have effects on the pathogenesis and progression of diabetes mellitus. Although decreased Zn/Cu ratio was found in our diabetic patients, no significant correlations were observed with clinical/biochemical characteristics except BMI, cholesterol, total cholesterol, and the number of coronary risk factors in our patients. Further studies may be the final arbiter of this issue.