

Hypomagnesemia As A Marker Of Diabetic Nephropathy

Magnesium is an essential element and has a fundamental role in carbohydrate metabolism in general and in the insulin action in particular. Magnesium is involved in multiple levels in insulin secretion, binding and activity. Cellular magnesium deficiency can alter the activity of the membrane bound Na⁺K⁺ ATPase, which is involved in the maintenance of gradients of sodium and potassium and in glucose transport. Magnesium depletion has a negative impact on glucose homeostasis and insulin sensitivity in patients with type 2 diabetes as well as on the evolution of complications such as retinopathy, arterial atherosclerosis and nephropathy. Moreover, low serum magnesium is a strong, independent predictor of development of type 2 diabetes. A cross sectional study included 105 type 2 diabetic patients. Twenty nine were males (27.6%) and seventy six were females (72.4%). Their ages ranged from 30 to 77 with a mean of 49.7 ± 10.6 . All patients were subjected to full clinical examination, and investigations which included: serum creatinine, HbA1c, albumin creatinine ratio and serum magnesium. Their mean BMI was 23 kg/m² and mean waist/hip ratio was 0.9. Their mean HbA1c was 8.55 %. Of all patients, 13 of them had normal level of A/C ratio (control group) and 92 were albuminuric with a mean A/C ratio 238.26 ± 727.9 with a range of 33.7 (0.09-4700), mean serum creatinine was 1.29 ± 1.16 and their mean serum magnesium level was 2.04 ± 0.49 with a range of 1.9 (0.8-3.9). We observed significant negative correlation between A/C ratio and serum creatinine with a p-value of <0.0001 . The study shows negative correlation between serum magnesium and A/C ratio ($r=-0.202$, $p=0.039$).