

Prevention of Hypomagnesemia in Diabetes Patients

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DEAR EDITOR,

Type 2 diabetes mellitus (T2DM) is a major global public health problem in the world-wide and is increasing in aging populations.^[1-3] We previously conducted a study entitled; lipids in association with serum magnesium in DM patients in 2008. In this study, on 122 patients, we found a significant inverse correlations of serum magnesium with serum cholesterol and low-density lipoprotein cholesterol (LDL-C).^[4] In this regard, we would like to remind a few points about the association of magnesium with serum lipids in T2DM. In the study conducted by Dasgupta *et al.* on 150, T2DM patients, hypomagnesemia was documented in 17 (11.33%) of patients. They concluded that hypomagnesemia in diabetes was associated with poorer glycemic control, retinopathy, nephropathy and foot ulcers.^[5] Baig *et al.* conducted a study on 60 patients of T2DM between 40 and 70 years. They observed that the mean serum magnesium level was statistically significantly low in diabetic patients without and with complications when compared with controls. Furthermore, they found that serum magnesium level in cases with diabetic complications was much lower than those without complications.^[6] Recently, Kocot *et al.* conducted a study on 54 T2DM and found, low concentration of magnesium in diabetic people in comparison to healthy individuals. They also found, a weak negative correlation between

plasma magnesium and total cholesterol as well as between plasma magnesium and triglycerides in diabetic patients.^[7] This finding was in agreement with our previous results.^[4] More recently Mishra *et al.* studied 45 known diabetic patients, observed significant negative relation of serum magnesium with triglyceride and very-LDL-C level and positive relation of magnesium with serum high-density lipoprotein cholesterol (HDL-C) too.^[8] The association of hypomagnesemia and insulin resistance in diabetes patients has been documented previously. Accordingly in the study of 219 diabetic patients, Rasheed *et al.* found serum magnesium had significantly positive correlation with HDL-C while total cholesterol and LDL-C was negatively correlated, albeit non-significantly, with serum magnesium.^[9] Furthermore, a study on 550 T2DM patients, revealed serum magnesium, significant negative correlation with estimated glomerular filtration rate.^[10] Thus, clinical care should therefore focus on increasing dietary magnesium intake or magnesium supplementation to improve metabolic control and prevent dyslipidemia in diabetes patients.

REFERENCES

1. Tavafi M. Complexity of diabetic nephropathy pathogenesis and design of investigations. *J Ren Inj Prev* 2013;2:61-5.

2. Rahimi Z. ACE insertion/deletion (I/D) polymorphism and diabetic nephropathy. *J Nephropathology* 2012;1:143-51.
3. Nasri H. On the occasion of the world diabetes day 2013; diabetes education and prevention; a nephrology point of view. *J Ren Inj Prev* 2013;2:31-2.
4. Nasri H, Baradaran HR. Lipids in association with serum magnesium in diabetes mellitus patients. *Bratisl Lek Listy* 2008;109:302-6.
5. Dasgupta A, Sarma D, Saikia UK. Hypomagnesemia in type 2 diabetes mellitus. *Indian J Endocrinol Metab* 2012;16:1000-3.
6. Baig MS, Shamshuddin M, Mahadevappa KL, Attar AH, Shaikh AK. Serum magnesium as a marker of diabetic complications. *J Evol Med Dent Sci* 2012;1:119-23.
7. Kocot DL, Sztanke M, Wiśniewska MN, Dąbrowski A, Andrzejewski A, Wallner G, *et al.* Plasma magnesium and calcium concentrations and selected biochemical parameters in patients with type 2 diabetes mellitus. *Curr Issues Pharm Med Sci* 2012;25:126-31.
8. Mishra S, Padmanaban P, Deepti GP, Sarkar G, Sumathi G, Toora BD. Serum magnesium and dyslipidemia in type-2 diabetes mellitus. *Biomed Res* 2012;23:295-300.
9. Rasheed H, Elahi S, Ajaz H. Serum magnesium and atherogenic lipid fractions in type II diabetic patients of Lahore, Pakistan. *Biol Trace Elem Res* 2012;148:165-9.
10. Pham PC, Pham PM, Pham PT. Patients with diabetes mellitus type 2 and hypomagnesemia may have enhanced glomerular filtration via hypocalcemia. *Clin Nephrol* 2012;78:442-8.

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