

MAGNESIUM- FRIEND OR FOE IN HAEMODIALYSIS PATIENTS?

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Magnesium (Mg) is a cation that has multiple roles in the human metabolism, from bone function to inflammation and insulin-resistance. In chronic kidney disease (CKD) patients, Mg accumulates usually by decreasing renal elimination, but long-term effects of hypermagnesaemia have not been confirmed. In the contrary, hypomagnesaemia in general population plays an important role in aggravation the cardio-vascular morbidity.

OBJECTIVES

- 1 Which are the serum magnesium levels in a chronic kidney disease population?
2. Does serum Mg correlates with iPTH levels and bone disease?
3. Is there a relationship between Mg an fasting glucose?
4. Can nutrition be a balance factor for Mg in HD?

METHODS

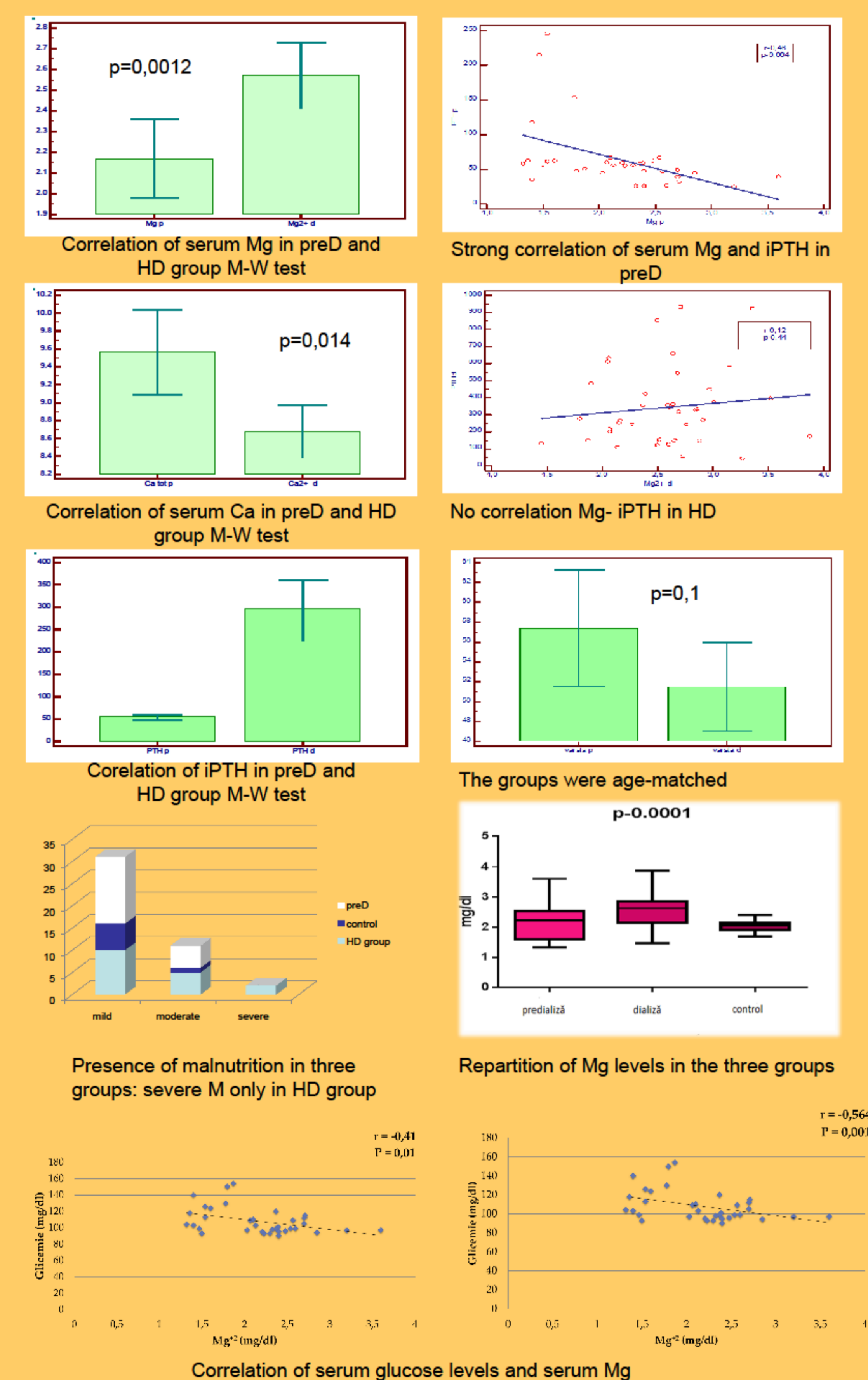
We studied 115 patients, 40 in the control group, 35 in the predialysis group and 40 dialysis patients. We recorded the following parameters: serum levels of fasting glucose, Mg, Ca, P and intact Parathormone (iPTH), body mass index, serum albumin and the Subjective Global Assessment scale (SGA). Statistical methods used were the Pearson correlation coefficient, Mann-Whitney test and student t-test.

RESULTS

Average Mg levels in the three groups were: 0.87mg/dl; 2.16mg/dl and 2,57mg/dl respectively. There was a significant correlation between the level of magnesium in predialysis patients and the control group, $p=0.0001$, and also between predialysis and the dialysis group, $p=0.0002$;

We found a good correlation between Mg and the iPTH levels in predialysis, $r=-0,46$, $p=0,004$; but not in dialysis patients where iPTH levels were very high. Regarding glucose, we found a good correlation of Mg with blood glucose levels in predialysis, $r=-0,41$, $p=0,01$ and a very good correlation of Mg with blood glucose levels in the dialysis group, $r=-0,56$, $p=0,001$

Nutrition status was estimated by BMI and albumin level. This was as follows: "well nourished" (grade A), "suspected malnutrition/moderately malnourished" (grade B), and "severely malnourished" (grade C). There was a weak negative correlation of Mg with the albumin level ($r=0,34$, $p=0,02$). Malnourished patients ($nr=5$) had higher levels of magnesium than the other two groups.



CONCLUSIONS

In dialysis patients there are higher levels of magnesium in hyperparathyroidism, but the abnormalities seem to start early, in the predialysis period. Intervention in the metabolic chain of glucose can be an explanation for the correlation with glucose levels. An important feature in dialysis patients is malnutrition, and high levels of magnesium can contribute to it. We suggest monitoring serum magnesium levels in the dialysis population at least bi-annually, adjusting it by lowering the Mg concentration of the dialysis solution and thus avoiding Mg containing medication.

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