LOW MAGNESIUM LEVELS ARE CLOSELY RELATED WITH FGF-23 LEVELS AND ARTERIAL STIFFNESS IN HEMODIALYSIS PATIENTS

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INTRODUCTION AND AIMS:

Arterial stiffness is a marker of extend of vascular disease in maintenance hemodialysis (MHD) patients and was reported to be closely associated with renal osteodystrophy. Hypomagnesaemia is a factor that has role in efficient parathyroid hormone functioning but usually this role in dialysis patients is underestimated during clinical practice. In this study we evaluated a group of MHD patients for identifying associations between magnesium, FGF-23, Klotho levels and arterial stiffness.

METHODS:

128 MHD patients were included (52.5 + 5.6 years old, 48 female). All patients a mean value of last 6 months magnesium, corrected calcium, phosphorus and parathyroid values were recorded from patient charts. Fibroblast growth factor-23, Klotho level measurements and arterial stiffness evaluations (in means of pulse wave velocity measurement PwV) were done after a stable hemodialysis session simultaneously.

Patients were grouped in to 4 groups according to their magnesium levels (group 1 lowest quartile, group 4 highest quartile).

RESULTS:

Magnesium levels were correlated negatively with FGF-23 (r: -0.448, p:0.001) and positively with Klotho (r: 0.185, p: 0.036). Magnesium was also negatively correlated with parathyroid levels near significancy (r: -0.148, p: 0.056). FGF-23 levels were positively correlated with PwV (r:0.165, p: 0.038) and negatively correlated with Klotho (r:-0.229, p:0.009). Comparison of magnesium quartiles revealed that lowest magnesium group had highest FGF-23 (p:0.023) and lowest Klotho (p:0.08) levels and highest PwV (p: 0.025) measurements.

CONCLUSIONS:

Hypomagnesaemia is an underestimated risk factor for increased FGF-23, decreased Klotho and arterial stiffness in MHD patients. Its' diverse influence on vascular function needs further investigation.

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