

SERUM MAGNESIUM CONCENTRATION AND MORTALITY IN HEMODIALYSIS PATIENTS: 5 YEAR FOLLOW-UP ANALYSIS

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INTRODUCTION AND AIMS

❖ Although hypomagnesemia predicts cardiovascular (CV) morbidity and mortality in the general population, the impact of magnesium (Mg) on the prognosis of patients on hemodialysis (HD) has been poorly investigated.

❖ The aim of this study was to elucidate the association between serum Mg levels and mortality in HD patients in a five year follow-up analysis.

METHODS

❖ We studied a cohort of 185 prevalent HD patients (age HD 49.74±14.71 years, HD vintage 99.86±65.73 months, diabetes 17.3%) receiving thrice-weekly HD treatment, with a dialysate Mg concentration of 0.5mmol/l.

❖ The mean values of minimum twelve serum Mg measurements during the six months before follow-up were used for analysis.

❖ Patients were divided into two groups according to the upper reference value of serum Mg concentration: a lower Mg group (Mg<1.11mmol/l) and a higher Mg group (Mg≥1.11mol/L) and were prospectively followed up for 60 months.

RESULTS

During the 5-year follow-up, 60 out of 185 patients (32.4%) had died, most from CVD (73.3%).

❖ The patients with serum Mg<1.11mmol/l were significantly different than those with serum Mg≥1.11mol/l regarding age, diastolic blood pressure, hemoglobin, creatinine, CRP, brain natriuretic peptide and left ventricular mass index. /Tabl 1/.

❖ Patients who died of all-causes had lower Mg concentration (1.19±0.16 vs. 1.25±0.15, p=0.007), as well as patients who died of CV causes (1.18±0.15 vs 1.25±0.15, p=0.011).

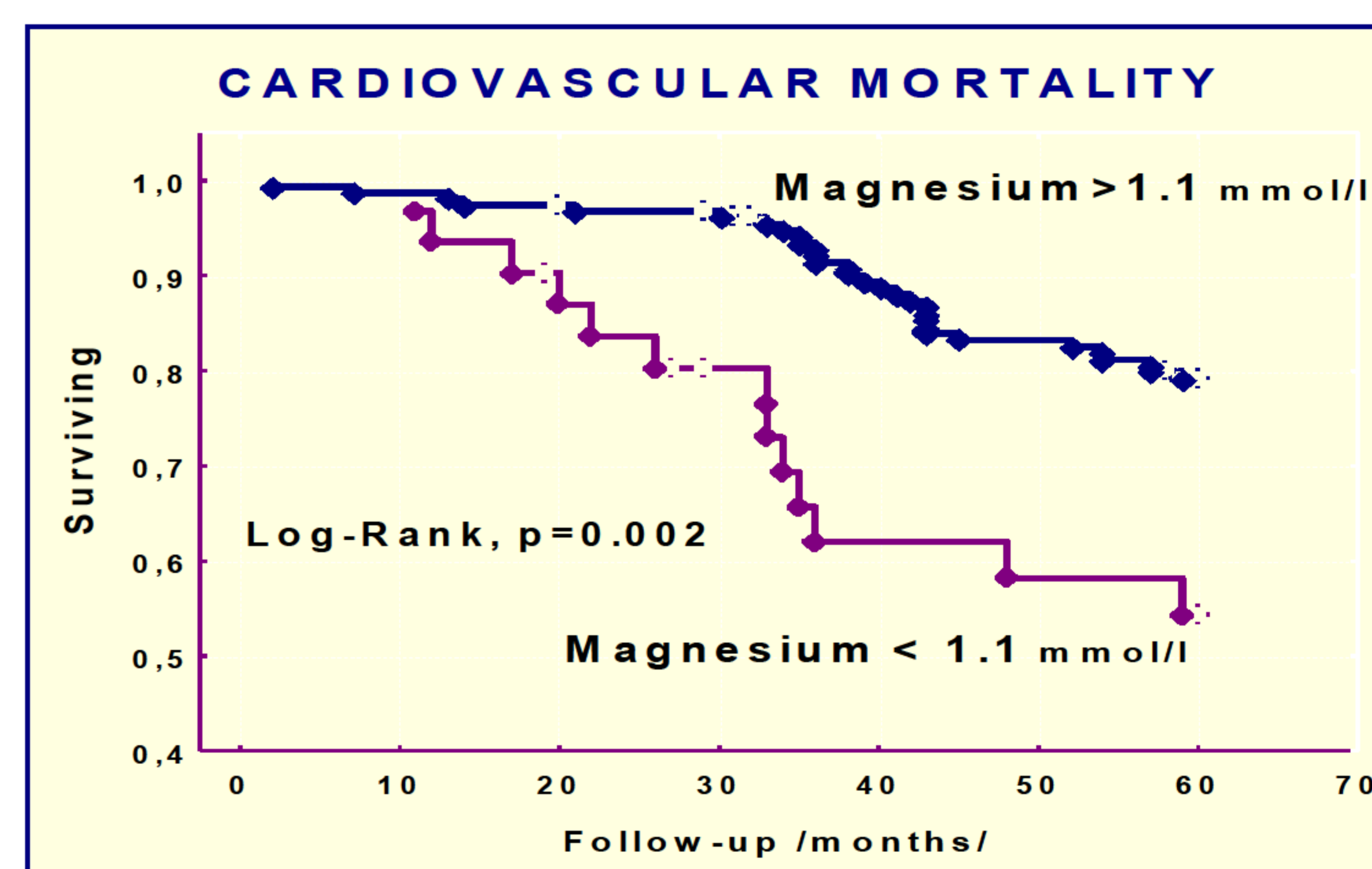
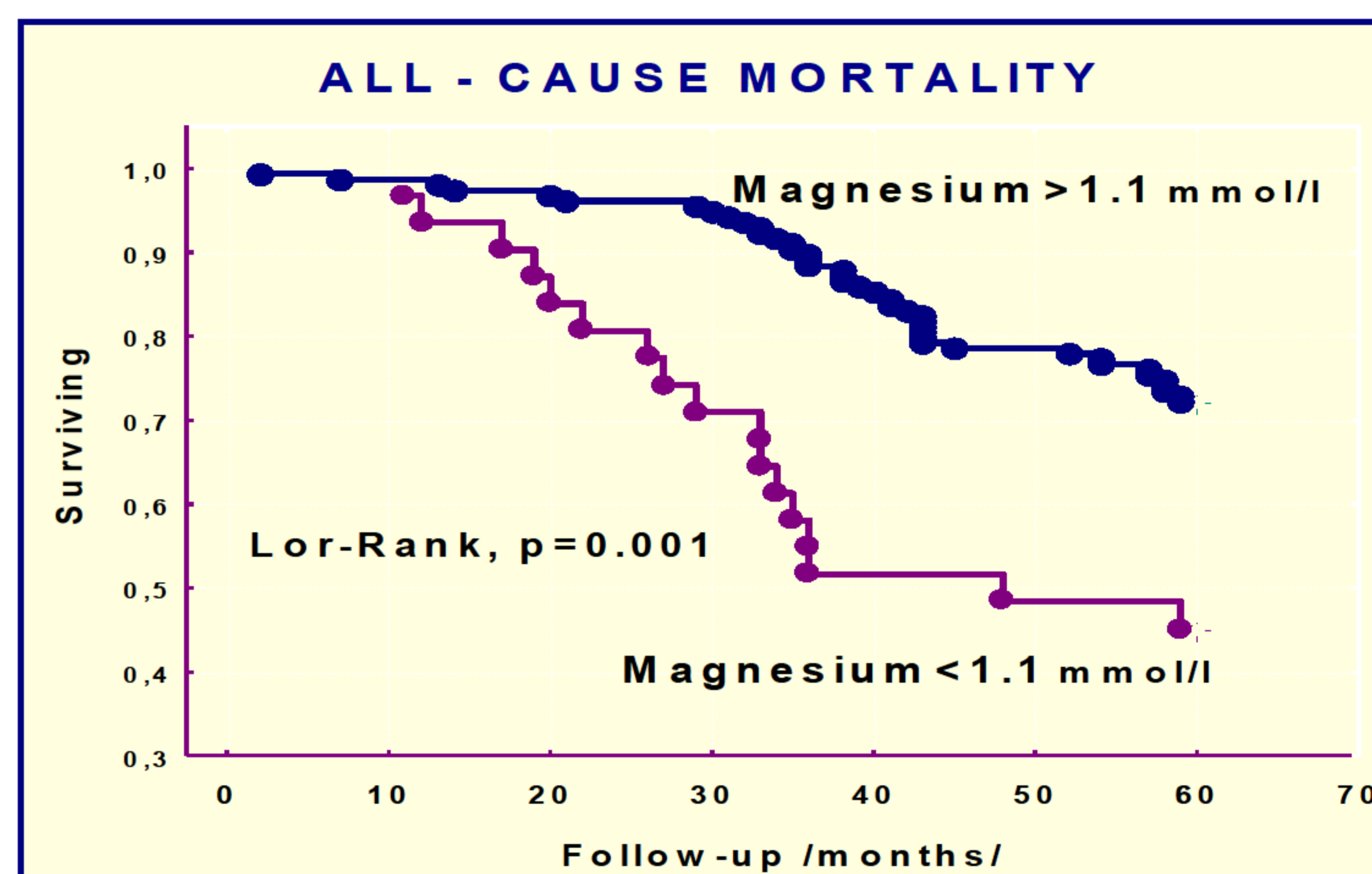
❖ Kaplan-Meier analysis showed that all cause mortality (log rank, p=0.001) and CV mortality (log rank, p=0.002) were significantly higher in the lower Mg group (<1.11 mmol/L), compared to that in the higher Mg group (≥1.11 mmol/l).

Tabl 1.Characteristics of the hemodialysis patients according to serum magnesium concentration

	Lower Mg group (Mg<1.11mmol/l)	Higher Mg group (Mg≥1.11mmol/l)	p
Age /years/	54,80 ± 13,66	48,72 ± 14.74	0,035
Magnesium	1.01 ± 0.07	1.29 ± 0.12	0.000
DBP /mmHg/	86,27 ± 17.01	80,67 ± 13.94	0,041
Hemoglobin /g/l/	98,27± 14.31	108,63 ± 10.54	0,000
Creatinine /μmol/l/	850,80 ± 236.15	938,50 ± 184.01	0.022
CRP /mg/l/	25,03 ± 25.66	12,57 ± 21.31	0.004
BNP /pg/ml/	4822,91 ± 9293.05	1343,00 ± 1409.86	0.000
LVMI /g/m ² /	164,41 ± 77.79	136,16 ± 44.67	0.016

BNP-brain natriuretic peptide; LVMI-left ventricular mass index;

Magnesium and mortality



❖ THE LOWER THE MAGNESIUM - THE HIGHER THE MORTALITY

This study showed that serum Mg level <1.11mmol/l is a significant predictor for all-cause and CV mortality in HD patients, although the mechanisms and the optimal magnesium levels in uraemic patients remain to be explored in future studies.

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