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Potential Cardiovascular Protective Role of Magnesium in Patients on Dialysis: Results From the ORCHESTRA Cohort

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Objectives : In patients with end-stage renal disease (ESRD), the progression of vascular calcification and the development of cardiovascular disease (CVD) are critical determinants of quality of life and clinical outcomes. This study aimed to investigate whether serum magnesium levels have a protective effect against vascular calcification progression and the incidence of cardiovascular events in this population.
Methods : The ORCHESTRA (the Korean Dialysis Cohort for Mineral, Vascular Calcification, and Fracture) study is a prospective, multicenter cohort involving 17 dialysis centers across Korea. Blood samples were collected at 6-month intervals, and vascular calcification was evaluated annually using lateral lumbar spine imaging to determine the abdominal aortic calcification score (AACS). Cardiovascular events were tracked over a 36-month follow-up period. For this analysis, data from 13 centers with complete datasets were included.
Results : Patients with higher time-averaged serum magnesium levels showed a trend toward a reduced risk of cardiovascular events (OR 0.39, p = 0.059). However, the progression of vascular calcification, measured by changes in AACS, was not significantly different between the high and low magnesium groups. Kaplan–Meier survival analysis showed no statistically significant difference in cardiovascular event-free survival between the groups (log-rank p = 0.1470). The estimated hazard ratio for the high magnesium group compared to the low group was 0.72 (95% CI: 0.42–1.21), suggesting a non-significant trend toward cardiovascular protection.
Conclusions : Higher time-averaged serum magnesium levels may be associated with a reduced risk of cardiovascular events in dialysis patients, suggesting a potential protective role of magnesium. Although the difference in vascular calcification progression was not statistically significant, the observed trends warrant further investigation in prospective studies with larger patient populations and longer follow-up periods.

K-M curve 2.png


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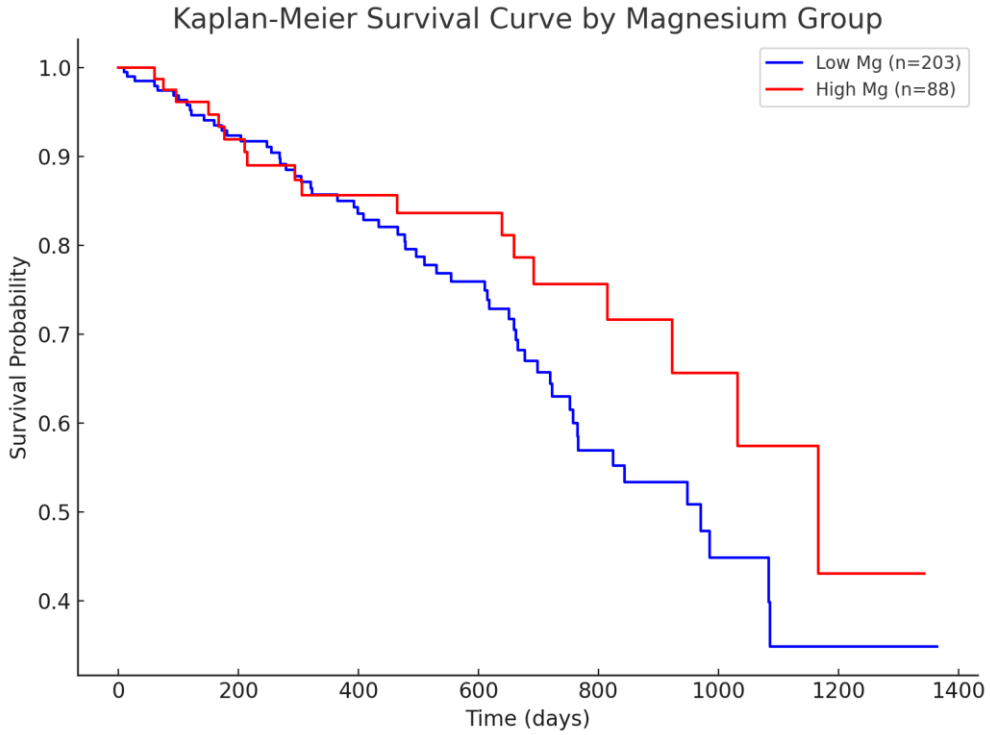
Kaplan-Meier Survival Curve by Magnesium Group
Low Mg (n=203)
High Mg (n=88)
Survival Probability
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0
200
400
600
800
1000
1200
1400
Time (days)