



Lecture Code : PG03-S3

Session Name : PG Education 3 (Fluid & Electrolyte)

Session Topic : Electrolyte Disorders in CKD and the Elderly: Clinical Challenges and Emerging Solutions

Date & Time, Place : June 19 (Thu) / 10:30-12:00 / Room 3 (GBR 103)

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## **Hypomagnesemia Is a Risk Factor for CKD and CVD?**

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Several key mechanisms contribute to the progression of chronic kidney disease (CKD), including vascular calcification, mineral metabolism imbalance, oxidative and metabolic stress, inflammation, coagulation disorders, endothelial dysfunction, and the accumulation of uremic toxins. Disruption of magnesium (Mg) homeostasis—particularly hypomagnesemia—is associated with the development and progression of related comorbidities. Hypomagnesemia likely triggers the release of inflammatory cytokines and C-reactive protein and promotes insulin resistance. Recent evidence indicates that Mg can reduce coronary artery calcification and promote peripheral vasodilation. Low Mg levels also exacerbate Klotho reduction induced by phosphate load in renal tubules. However, the clinical decision to prescribe Mg supplements in Mg-deficient patients remains uncertain due to insufficient strong evidence to support formal recommendations. Nonetheless, existing data suggest potential benefits of Mg in reducing vascular calcification, cardiovascular disease (CVD), and preserving kidney function. Further studies are needed to determine whether Mg supplementation can slow the progression of CKD and/or CVD.

**Keywords:** Magnesium, CKD, CVD, Vascular calcification, Inflammation