

Abstract

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Micronutrients and cardiorenal disease: insights into novel assessments and treatment.

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BACKGROUND AND OBJECTIVE: Chronic kidney disease (CKD) is a recognized risk multiplier for development of cardiovascular disease (CVD), with CVD events representing the leading cause of morbidity and mortality in patients with CKD. The nature of CKD as a risk state relates both to the nature of CKD and the antecedent development of CVD. In addition, patients with CKD have increased rates of multiple conventional cardiac risk factors. The essence of the relationship appears to be bidirectional, and therapy directed at improving natural history of chronic disease on one system generally improves prognosis in the other. Hence the term 'cardiorenal syndrome' (CRS) is used to describe the complex interrelationships between the two organ systems.

FINDINGS: While focus on therapeutic targets has been dominated by interest in neurohormonal mechanisms, little attention has been given to micronutrients and their potential effects in CRS. As renal function declines, cellular metabolism changes profoundly, and when artificial means of solute removal are initiated by peritoneal dialysis or hemodialysis, there are considerable shifts of many micronutrients that may affect cardiovascular health predominantly through the mechanism of increasing labile iron-dependent oxidative stress. Release of labile iron at the tissue level appears to be most important in acute CRS, whereas phosphate and sodium retention play more of a role in chronic CRS.

CONCLUSION: Attention will be given to selected micronutrients which may call for novel assessments and intervention for optimal cardiorenal outcomes.

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