

CHRONIC KIDNEY DISEASE

Association of FGF23 with left ventricular hypertrophy

Increased serum concentrations of FGF23 are associated with increased left ventricular mass and an increased risk of left ventricular hypertrophy, according to two new studies. “Given that left ventricular hypertrophy is strongly associated with mortality across the spectrum of kidney disease, these findings may help explain the association between increased FGF23 and mortality in chronic kidney disease,” says Orlando Gutiérrez, from one of the research groups.

In patients with chronic kidney disease (CKD), FGF23 levels are increased to maintain normal concentrations of serum phosphate. However, although upregulated FGF23 mitigates phosphate retention, previous studies have demonstrated an association between increased FGF23 concentrations and mortality in patients initiating hemodialysis, suggesting that excess FGF23 could have deleterious long-term consequences in these patients.

To explore the mechanisms of the association between FGF23 and mortality, two studies independently examined the relationship between FGF23 and known risk factors of mortality in patients with CKD. Gutiérrez and colleagues investigated left ventricular structure and function in pre-dialysis patients with CKD to determine whether FGF23 is associated with very early manifestations of cardiovascular disease. They found that increased FGF23 levels were associated with increased left ventricular mass and increased risk of left ventricular hypertrophy, independently of classic risk factors.

The second study group, led by Tobias Larsson, also investigated the association between serum FGF23 levels, and left ventricular mass and hypertrophy in healthy elderly individuals and in elderly individuals with early-stage CKD. As Larsson explains, “higher circulating FGF23 levels were related to higher left

ventricular mass and an increased risk of left ventricular hypertrophy. Importantly, this was not only observed in patients with CKD, but also in individuals with normal renal function.”

Both groups now plan further studies to determine the mechanisms that underlie the association between FGF23 and left ventricular hypertrophy; “if FGF23 can promote myocardial hypertrophy then therapies to lower FGF23 may ameliorate the development of left ventricular hypertrophy in patients with CKD,” concludes Gutiérrez.

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Original articles Gutiérrez, O. M. *et al.* Fibroblast growth factor 23 and left ventricular hypertrophy in chronic kidney disease. *Circulation* **119**, 2545–2552 (2009).
Mirza, M. A., Larsson, A., Melhus, H., Lind, L. & Larsson, T. E. Serum intact FGF23 associate with left ventricular mass, hypertrophy and geometry in an elderly population. *Atherosclerosis* doi:10.1016/j.atherosclerosis.2009.05.013