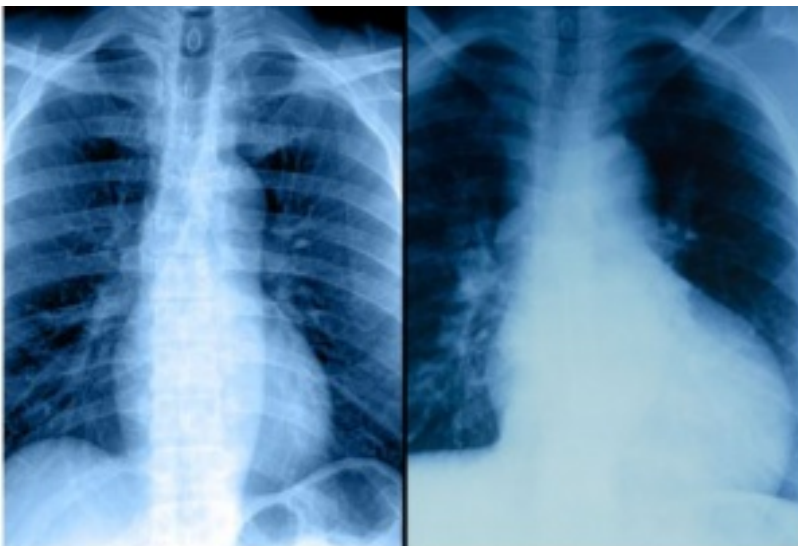


# Miller School Study Reports Cardioprotection of Activated Vitamin D in Kidney Insufficiency

A research team led by members of the Division of Pediatric Nephrology at the University of Miami Miller School of Medicine has reported novel mechanisms targeted by activated vitamin D resulting in clinical attenuation of cardiac hypertrophy. The [study](#) was published in the *American Journal of Hypertension* in October.



X-rays show the difference between a heart with cardiac hypertrophy (on right) and one treated with paricalcitol

Cardiovascular disease, usually associated with cardiac

hypertrophy, is the most common cause of death in patients with chronic kidney disease (CKD), including dialysis-dependent CKD. Reduced levels of vitamin D activated in the kidney (calcitriol) and elevated levels of fibroblast growth factor 23 (FGF23) – a key hormone produced by the bone aimed at maintaining blood phosphorus concentrations – have emerged as important modulators of myocardial hypertrophy. Molecular mechanisms are initiated inside the myocardium cells that promote their abnormal growth, resulting in clinical left ventricular hypertrophy (LVH). LVH is the main cause of heart failure, arrhythmias, and the high mortality rates of CKD patients.

“For the first time, we were able to demonstrate that when a dose of paricalcitol (a vitamin D analog used extensively in CKD patients) was sufficiently high enough to counteract the FGF23 effects on the myocardium in young patients, cardiac hypertrophy either improved or never developed while on dialysis,” said Michael Freundlich, M.D., University of Miami Health System pediatric nephrologist and lead investigator in the study. “This was revealed through serial echocardiograms.”

Experimental studies performed in animals with kidney failure showed that paricalcitol improved kidney function, suppressed myocardium upregulated calcineurin target genes, and improved cardiac hypertrophy, all potentiated by the addition of an agent blocking FGF23, despite persistently elevated levels. These experiments were conducted by Christian Faul, Ph.D. initially at the University of Miami’s Peggy and Harold Katz Family Drug Discovery Center and Division of Nephrology and Hypertension and more recently at The University of Alabama in Birmingham, and Bernardo Rodriguez-Iturbe, M.D., from the

University Hospital of Maracaibo, Venezuela.

“Future studies with larger numbers of patients are needed to confirm these exciting novel findings,” said Dr. Freundlich.