FIBROBLAST GROWTH FACTOR 23 AND LOW 25 OH VITAMIN D PLASMA LEVELS ARE INDEPENDENT PREDICTORS OF CARDIOVASCULAR EVENTS IN PATIENTS WITH CHRONIC CORONARY ARTERY DISEASE

Authors: José Tuñón, Carmen Cristóbal, Nieves Tarín, Emilio Gonzalez-Parra, Álvaro Aceña, María Luisa Gonzalez-Casaus, Ana Isabel Huelmos, Óscar Lorenzo, Joaquín Alonso-Martín, Jesús Egido, Lorenzo López-Bescós, IIS-Fundación Jiménez Díaz, Madrid, Spain

Background: Phosphate (P), parathormone (PTH) and low 25 OH vitamin D (VitD) levels have been related to cardiovascular disorders. Fibroblast growth factor 23 (FGF23) increases renal P excretion. FGF23 plasma levels increase in early chronic kidney disease to compensate low phosphaturia, and have been related to vascular and myocardial damage. We have investigated if plasma levels of these molecules are related to the incidence of cardiovascular events in patients with coronary artery disease (CAD).

Methods: We have followed 704 patients with chronic CAD up to 4.6 years. Clinical data were recorded at baseline and plasma was stored at -80°C. We assessed P, PTH, vit D and FGF23. The end-point was the development of ST-elevation myocardial infarction, non-ST elevation acute coronary syndrome, stroke, transient ischemic attack, heart failure or death.

Results: Age was 61.4±12.3 and glomerular filtration rate (GFR) estimated by CKD-EPI was 76.1±20.5 ml/min1.73 m2. Seventy-five percent were men. Mean follow-up was 2.15±0.99 years. Seventy-seven patients developed the end-point. At univariate analysis, age, creatinin, FGF23 and PTH plasma levels as well as female sex, diabetes, hypertension, previous coronary artery by-pass graft, therapy with acenocumarol, diltiazem, nitrates/nitroglycerin, diuretics or proton pump inhibitors and lack aspirin or statin therapy were associated to the development of this end-point. VitD levels and GFR estimated by CKD-EPI and MDRD were inversely associated to this end-point. C reactive protein, P, and lipid levels did not show significant differences. By Cox proportional hazards regression model only FGF23 [hazard ratio 1.120 (CI 1.029-1.220); p=0.009] and VitD levels [hazard ratio 0.677 (CI 0.478-0.958); p=0.028] remained as independent predictors of the end-point, along with age, hypertension, and therapy with nitrates and proton pump inhibitors. There was a significant correlation between GFR and both FGF23 (r=-0.270; p<0.001) and PTH (r=-0.355; p<0.001). VitD and P were not significantly correlated with renal function.

Conclusions: High FGF23 and low VitD plasma levels are independently associated to an adverse prognosis in patients with CAD.