SERUM FIBROBLAST GROWTH FACTOR TYPE 23 (FGF 23) IN THE EARLY AND LATE POSTTRANSPLANTATION PERIOD IN KIDNEY ALLOGRAFT RECIPIENTS

Authors: Ashot Essaian[1,2], Aysa Nimgirova[1,2], Ivan Kayukov[1], Ekaterina Zuyeva[1], Olga Galkina[1], Tatyana Denisova[2]

Hospital: [1]*St. Petersburg State Medical University n.a. Pavlov, St. Petersburg, Russia; City Hospital N 31, St. Petersburg, Russia*

OBJECTIVES

An increased level of FGF 23 is an independent risk factor for mortality, cardiovascular disease, and chronic kidney disease progression. However the role of FGF 23 in transplant allograft as well as kidney recipients survival is unknown.

We assessed the level of serum FGF 23 in kidney allograft recipients and to evaluate relationship between FGF 23 level and some clinical laboratory parameters in early and long-term period after cadaveric kidney transplantation.

METHODS

Forty six renal allograft recipients aged 18-65 years were divided into the 2 groups according to vintage of post-transplant period (5-192 months): group 1 - ≤ 24 months (21 pts), group 2 - > 24 months (25pts). Serum FGF 23 levels have been measured using commercial enzyme-linked immunosorbent assay kits. Serum phosphate, calcium, potassium, sodium, creatinine, urea, alkaline phosphatase, uric acid, lipids, glucose, as well as proteinuria and glomerular filtration rate (GFR) were measured at the same date.

RESULTS

There were no significant intergroup differences in FGF23 level because of wide variation in individual data. However in Group 1 serum FGF23 level positively correlated with patients age ($r = 0.472$; $P = 0.031$), duration of dialysis treatment ($r = 0.474$; $P = 0.030$), and systolic blood pressure ($r = 0.482$; $P = 0.027$), as well as with serum creatinine ($r = 0.523$; $P = 0.015$), urea ($r = 0.483$; $P = 0.026$), sodium ($r = 0.634$; $P = 0.002$), uric acid ($r = 0.712$; $P < 0.0001$), alkaline phosphatase ($r = 0.506$; $P = 0.019$), and proteinuria ($r = 0.615$; $P = 0.003$), and negatively – with GFR ($r = -0.493$; $P = 0.023$). In Group 2 serum FGF23 levels also significantly related to allograft function: positive correlation with serum creatinine ($r = 0.430$; $P = 0.031$), and proteinuria ($r = 0.637$; $P = 0.001$), and negative – with GFR ($r = -0.542$; $P = 0.005$). In the same time correlation vectors between serum FGF23 and phosphate levels were headed in different directions in studied groups: negative correlation in group 1 ($r = -0.439$; $P = 0.046$) because of phosphaturic effect of FGF23, and positive one in group 2 ($r = 0.413$; $P = 0.04$) probably as the consequence of deterioration of kidney function.

CONCLUSIONS

In cadaver kidney recipients post-transplant course of the phosphate–FGF23 relationships introduce two-dimensional pattern: in the early perod after kidney transplantation high level of FGF23 induce well-known effect of phosphaturia and hypophosphatemia with the negative correlation between serum FGF23 and phosphate levels, whereas later (after two years post-transplant) the deterioration of kidney function and phosphate retention lead to increasing synthesis of FGF23 (positive correlation).

REFERENCES:

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