

Cinacalcet treatment decreases plasma FGF23 concentration in hemodialysed patients with chronic kidney disease and secondary hyperparathyroidism

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Objective: Results of recent clinical studies suggest that fibroblast growth factor 23 (FGF23) is an important, novel factor involved in the pathogenesis of calcium-phosphate abnormalities in patients with chronic kidney disease and that increased plasma FGF23 concentration is a cardiovascular risk factor in these patients. The aim of this prospective, single-arm, open-label clinical study was to assess the influence of six-month cinacalcet treatment on plasma FGF23 concentration in hemodialysed patients with secondary hyperparathyroidism (sHPT).

Patients and Measurements: In 58 hemodialysed patients with sHPT (PTH>300) serum PTH, FGF23, calcium and phosphate concentrations were assessed before the first dose of cinacalcet and after 3 and 6 months of treatment. The results are shown as means and 95% confidence index.

Results: Serum PTH concentration decreased significantly

after 3 and 6 month of treatment from 1138 (931-1345) pg/ml to 772 (551-992) pg/ml; $p<0.0001$ and to 635 (430-839) pg/ml; $p<0.0001$, respectively. Mean serum calcium and phosphate concentrations remained stable during the treatment period. Plasma FGF23 concentration decreased after 3 and 6 months of treatment from 593 (457-730) pg/ml to 513 (380-645) pg/ml; $p=0.099$ and to 433 (304-561) pg/ml; $p=0.015$, respectively (figure 1). There was a heterogeneous response in plasma FGF23 decrease – FGF23 concentration decreased in 52% of patients. A significant decrease in serum phosphate concentration after 3 and 6 months of treatment in patients with FGF23 decrease, but not in patients with stable plasma FGF23 concentration was observed (figure 2). There was a significant positive correlation between the magnitude of decrease of plasma FGF23 and serum phosphate concentrations (figure 3).

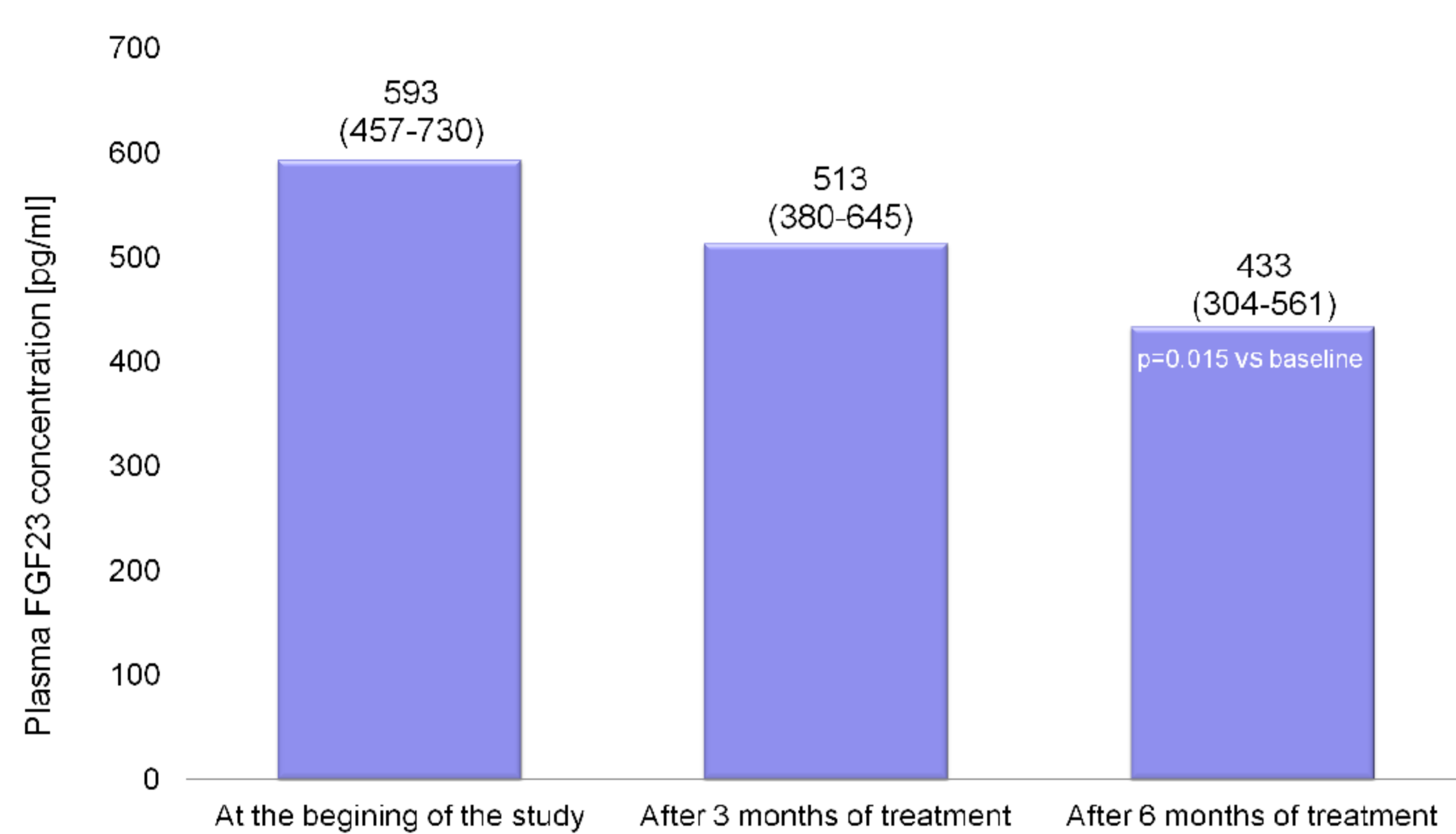


Figure 1. Influence of the treatment with cinacalcet on plasma FGF23 concentration in hemodialysed patients with CKD and sHPT

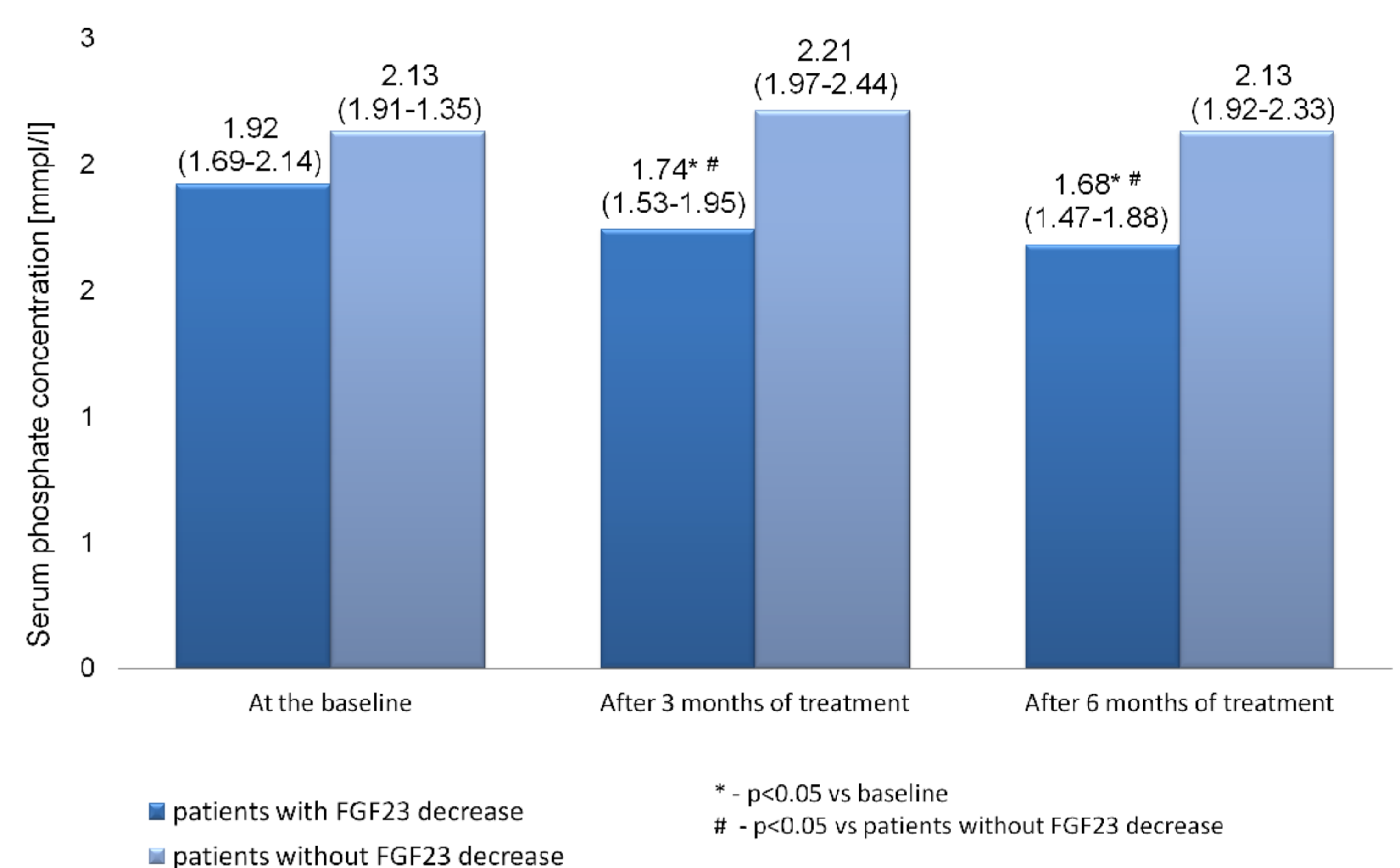


Figure 2. Serum phosphate concentration in patients with or without plasma FGF23 decrease

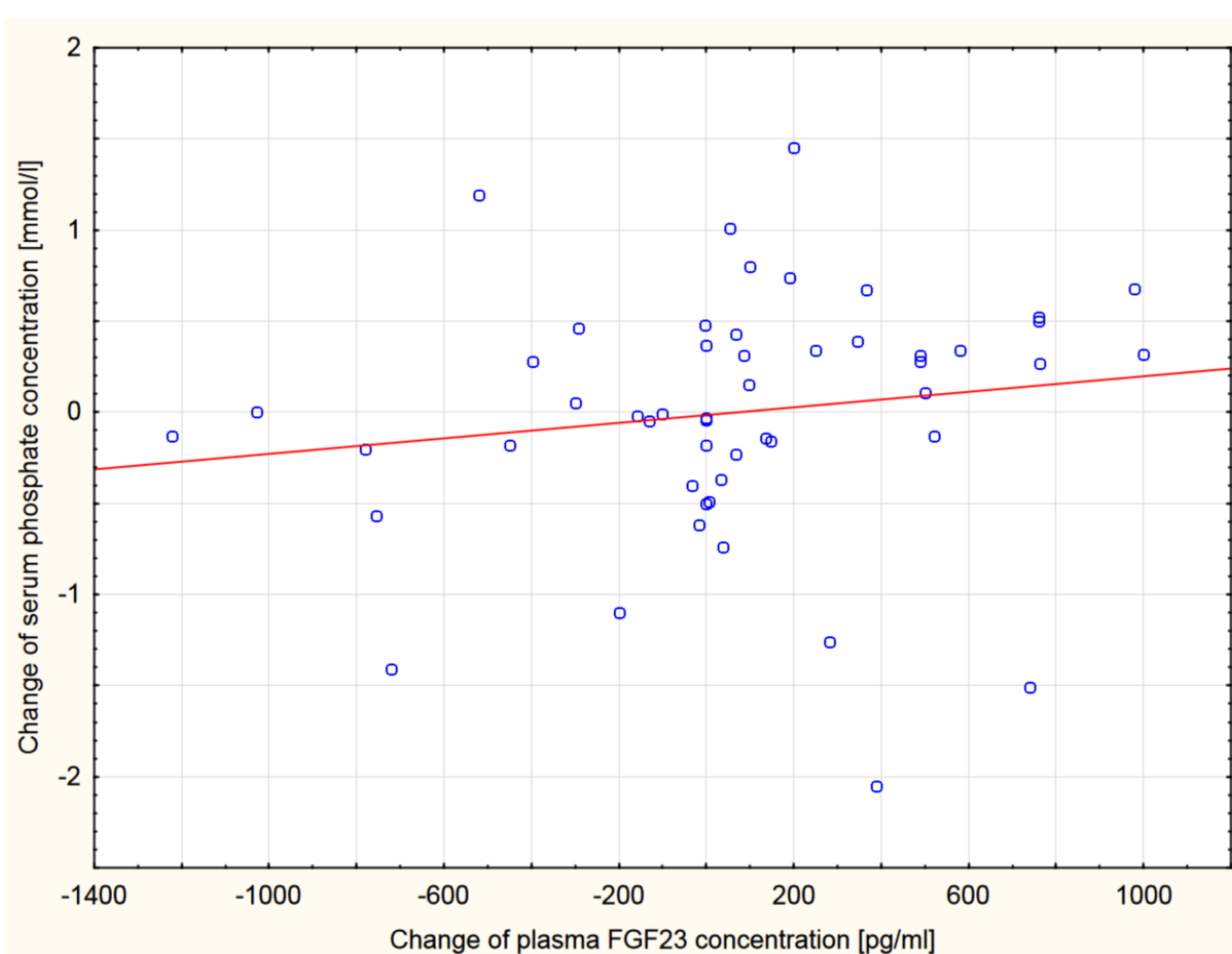


Figure 3. Correlation between the changes of serum phosphate concentration and plasma FGF23 concentration after 3 months of cinacalcet treatment

Conclusions:

1. Cinacalcet treatment decreases plasma FGF23 concentration in hemodialysed patients with secondary hyperparathyroidism.
2. Decrease of plasma FGF23 concentration in patients treated with cinacalcet seems to be related mostly to the decrease of serum phosphate concentration.

