

LONG TERM EVOLUTION OF THE MINERAL METABOLISM AFTER RENAL TRANSPLANTATION

Selma Alagoz¹, Serkan F. Yalin¹, Sibel Gulcicek¹, Meric Oruc¹, Sinan Trabulus¹, Meltem Pekpak¹, Rezzan Ataman¹, Mehmet R. Altiparmak¹, Nurhan Seyahi¹

¹Istanbul University Cerrahpasa Medical Faculty, Nephrology, Istanbul, TURKEY

BACKGROUND

Abnormalities in bone and mineral metabolism are common after renal transplantation but information on their long-term time course is scarce. We evaluated the time course of biochemical parameters of mineral metabolism over 60 months after RT and identified predictors for persistent hyperparathyroidism.

METHODS

We retrospectively analyzed medical records of 176 consecutive patients who had kidney transplantation between 2002 and 2012. We collected data on serum levels of intact parathyroid hormone (iPTH), calcium (Ca), phosphorus (P) and creatinine (Cr) preoperatively and then at first week, 1, 3, 6, 9, 12, 24, 60 months after renal transplantation. We in addition recorded demographic, clinical, and therapeutic data.

Table 1: Baseline characteristics of all patients.

Recipient age	32.9±11.8 (30, [15-68])
Male gender, n (%)	109 (61.9)
Dialysis duration, (months)	33.7±33.0
Deceased donor, n (%)	30 (17.0)
Phosphate binder use, n (%)	67 (38.1)
Calcium use, n (%)	22 (12.5)
Vitamin D use, n (%)	19 (10.8)
Bisphosphonate use, n (%)	6 (3.4)

Table 2. Biochemical parameters after renal transplantation

	Pre-Tx	6 mo	12 mo	24 mo	60 mo
Crea (mg/dl)	8.3 ±2.6	1.3±0.5	1.3±0.4	1.3±0.5	1.3±0.4
Ca (mg/dl)	9.1±1.0	9.7±0.6	9.7±0.6	9.7±0.6	9.6±0.7
P (mg/dl)	5.4±1.6	3.3±0.6	3.3±0.6	3.2±0.6	3.3±0.7
iPTH (pg/ml)	415±422	164±20 3	150±154	124±10 3	101±72
Hyperparathyroidism n(%)	122(78.7)	32(36.0)	41(34.5)	37(25.8)	24(17.8)

RESULTS

Demographic and clinical characteristics of study participants are listed in Table 1. Pre-transplantation iPTH regressed from 415±422 to 164±203 pg/ml at 6 months. Baseline serum Ca stabilized from 9.1±1.0 to 9.6±0.7 mg/dl at 1 month. Baseline serum P stabilized from 5.4±1.6 to 3.3±0.6 mg/dl at 6 months. Stable graft function (1.3±0.5 mg/dl) was achieved from 6 months onward (Table 2). By 60 months, 13.5% of patients had serum Ca above 10.2 mg/dl; 11.7%, serum P below 2.5 mg/dl; and 17.8%, serum iPTH more than 2-fold the upper limit of normal. According to univariate analysis female sex, duration of dialysis, iPTH and Ca serum levels at the first post-transplant week were significantly associated with hyperparathyroidism at first year. However at multivariate logistic regression only first week hypercalcemia remained significantly associated with first year hyperparathyroidism.

CONCLUSIONS

Hypercalcemia, hypophosphatemia, and elevated iPTH persist in a subset of post-RT patients. Hypercalcemia in the early post-transplant period seems to be a risk factor for persistent hyperparathyroidism.

References

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