

16th EUROPEAN NEPHROLOGY CONFERENCE

October 02-03, 2017 Barcelona, Spain

Clinical and biochemical predictors of persistent hyperparathyroidism post renal transplantation: A single centre experience

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Hyperparathyroidism improves after kidney transplantation (KTR). However, persistent hyperparathyroidism (PH) may occur and is associated with a higher risk of cardiovascular events, fractures, allograft failure, and all-cause mortality. Pre-transplant parathyroidectomy (PTX) has been advocated to prevent the risk of PH and complications of post-transplant PTX. However, there is no defined criterion for timing of pre-transplant PTX. This study seeks to identify predictors of PH following transplantation to guide timely intervention. All first KTR performed in our tertiary care center, between January 2005 and July 2015 with follow-up of until 12 months and pre-transplant dialysis of more than 3 months were recruited for analysis (n=169). PH was defined as serum corrected calcium (cCA) of > 2.50 and serum iPTH > 6.5 pmol/L at 12 months post-transplant. Baseline demographic and biochemical data were compared between groups with and without PH. Univariate analysis was performed and significant predictors of PH were further analyzed with multivariate regression analysis. Mean age of study population was 45.8 (9.9) years. Dialysis vintage was 88 months (36-140) and 84% were on hemodialysis. 68% of patients received deceased donor KTR. PH was diagnosed in 65 patients (38 %). These patients were older (48 (7.9) vs 44.4 (10.8), $p=0.025$), had longer dialysis vintage (108 vs 77 months $p=0.002$), and higher pre-transplant cCA (2.51 (2.34, 2.68) vs. 2.29 (2.07, 2.51), $p<0.0001$), alkaline phosphatase (127.0 (114.0, 140.0) vs. 88.0 (38.0, 105.0), $p=0.016$), iPTH (90.2 (29.0, 127.2) vs. 38.0 (11.7, 49.9), $P=0.0002$), and phosphate (1.90(1.38,2.42) vs 1.66(1.14,2.18), $P=0.0056$) levels. Estimated GFR was lower in patients with PH at 12 months (54.5 (34.5, 75.0) vs. 61.0 (42.0, 80.0), $P=0.0001$). Older patients, longer dialysis vintage, and higher pre-transplant alkaline phosphatase, cCA, iPTH, and phosphate levels were associated with increased risk of PH in univariate analysis. Following multivariate adjustment, longer dialysis vintage (HR=1.011, 95% CI=(1.001,1.021)), higher pre-transplant cCa (HR=1.647, 95% CI=(1.296, 2.177)), and higher iPTH (HR=1.015, 95% CI=(1.006,1.026)) remained significant. Longer dialysis vintage, higher pre-transplant iPTH and pre-transplant hypercalcemia are important predictors of PH following kidney transplant.

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