Impact of Parathyroidectomy on Renal Graft Function: A Single Center Perspective

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Background and Methods: In this study, we retrospectively evaluated the impact of parathyroidectomy (PTX) on renal graft function in stable renal transplant recipients treated for persistent post-transplant hyperparathyroidism in our center. All renal transplant recipients receiving PTX after renal transplant from 1999 to 2005 were recruited. Serum creatinine (SCr) levels were measured at pre-PTX, 1 month, 3 months and 6 months post-PTX. Changes in serum [Ca] and [PO_4], parathyroid hormone level (PTH), hemoglobin (Hb) and BP control were also studied. Data were expressed in mean ± SD or median (IQR). **Results:** Thirteen patients (M:F = 7:6) with a mean age of 44.0 ± 9.0 years were recruited. PTX was performed at a median of 35.9 (68.6) months post-transplant. Mean SCr before PTX was 142.5 ± 49.7 μmol/L. All patients received calcium and vitamin D supplements post-PTX. Serum [Ca] and PTH levels improved significantly after PTX (Table 1). Significant increases in patients' SCr were observed at 1 month, 3 months and 6 months post-PTX (Table 2). No significant changes in Hb (12.5 vs 12.3 g/dL, $p = 0.36$), mean arterial pressure (91.1 vs 89.0 mmHg, $p = 0.40$) and number of anti-HT drugs used before and after PTX were observed.

Table 1

	Pre-PTX	Post-PTX
Ca (mmol/L)	2.90 ± 0.12	2.49 ± 0.28*
PO_4 (mmol/L)	0.96 ± 0.11	1.33 ± 0.17*
PTH (pmol/L)	33.5 ± 27.6	4.3 ± 7.2*

*$p < 0.005$.

Table 2

	Pre-PTX	1 month	3 months	6 months
SCr (μmol/L)	142.5 ± 49.7	157.0 ± 40.9*	160.7 ± 44.8$^+$	161.1 ± 46.0$^+$
% Change		13.3 ± 14.6*	15.2 ± 12.6$^+$	15.2 ± 9.4$^+$

*$p < 0.05$; $^+p < 0.005$.

Conclusion: PTX was effective in the management of post-transplant hyperparathyroidism but was associated with deterioration in renal graft function that persisted at 6 months post-PTX. The mechanism of the deterioration remains to be elucidated.

Early Experience of C4d Staining in Renal Graft Biopsies: Two Years' Experience

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Background and Methods: Local data is lacking on the use of C4d in renal graft biopsies. We report our experience on its application and attempt to find out its prognostic significance. Renal graft biopsies performed between 1 April 2003 and 31 March 2005 were reviewed. **Results:** There were 42 biopsies, 25 (59.5%) from males. Mean age ± SD at biopsy was 44.85 ± 10.83. The primary causes of renal failure included glomerulonephritis (26.2%), diabetes (16.7%), hereditary (7.1%), unknown (40.5%), and others (9.5%). Duration of follow-up was 11.4 ± 6.24 months. Histologic diagnoses included acute tubular necrosis (ATN) (28.6%), acute cellular rejection (Banff 1997) (borderline, 9.5%; type I, 23.8%; type II, 2.4%), and others (35.7%). Sixteen of 42 (38.1%) were stained C4d positive (10 focal, 6 diffuse). C4d positive and negative groups received similar immunosuppression and demonstrated similar histologic findings, except a higher prevalence of ATN (11/26 vs 2/16; $p = 0.084$) and arteriosclerosis (6/26 vs 0/16; $p = 0.067$) in the latter group. C4d positive patients were more likely to receive pulse steroid after renal biopsies (7/16 vs 3/26; $p = 0.027$) and to have higher serum creatinine levels at 6 months (in μmol/L: 254.6 ± 129.7 vs 162.1 ± 63.9; $p = 0.056$). Nevertheless, graft survival (in months) did not differ significantly [16.05 ± 1.73 vs 19.3 ± 1.74 (SE); $p = 0.58$]. **Conclusion:** Routine C4d staining is needed as its status cannot be predicted by histologic findings. Positive C4d staining is probably associated with poorer renal outcome.

Effects of Cyclosporine and Tacrolimus on the Pharmacokinetics of Mycophenolic Acid in Renal Transplant Recipients

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Background and Methods: To investigate the effects of cyclosporine (CsA) and tacrolimus (TAC) on mycophenolic acid (MPA) pharmacokinetics, we compared MPA profiles taken at 1 and 3 months post-transplant from renal transplant patients receiving mycophenolate mofetil (MMF) (2 g/day) plus CsA ($n = 8$) and MMF (1 g/day) plus TAC ($n = 7$). All patients received concomitant prednisolone. Blood samples were taken at 0 (trough), 20, 40, 60, 75 and 90 minutes, and at 2, 4, 6, 8, 10 and 12 hours post-dose for each MPA profile. Plasma MPA levels were determined by HPLC. **Results:** Mean MPA trough levels were higher at both 1 and 3 months in the TAC group compared with the CsA group (2.73 ± 1.20 vs 1.21 ± 0.42 μg/mL at 1 month, $p < 0.005$; 2.97 ± 2.07 vs 1.24 ± 0.69 μg/mL at 3 months, $p < 0.05$). Mean MPA AUC_{0-12h} in the TAC and CsA groups were 40.5 ± 9.4 and 35.7 ± 5.0 μg*h/mL at 1 month ($p > 0.05$), and 44.4 ± 17.2 and 43.2 ± 10.8 μg*h/mL at 3 months ($p > 0.05$), respectively. A second peak was observed in MPA profiles in the TAC but not the CsA group. When MPA levels were dose-normalized to 1 g MMF, mean MPA trough, C_{max} and AUC_{0-12h} at 1 and 3 months were significantly higher in the TAC group compared to the CsA group. **Conclusion:** These data suggest that CsA affects MPA pharmacokinetics by interrupting the enterohepatic recirculation of MPA. Using a 50% lower dose of MMF can achieve a similar MPA exposure when used in combination with TAC compared to CsA. MMF dose adjustment and drug monitoring may be necessary when CsA is switched to TAC or vice versa.