POST-TRANSPLANT HYPERPARATHYROIDISM: RETAINED CONTROL BY SERUM Ca$^{++}$

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Post-transplant (P-Tx) hyperparathyroidism (HPTH) is considered an autonomous state which involutes over time [1,2]. Our studies addressed these untested notions.

Methods

Paired measurements of serum Ca$^{++}$ (ion-specific electrode) and PTH (both by a 50% N-/50% C-terminal immunoassay and by a C-terminal specific immunoassay) were made over a wide range of Ca$^{++}$ (1.2 to 5.0mEq/L) in eight normal and 13 HPTH, transplant recipients in the basal state and during a 2 hour EDTA (50mg/kg) and a 4 hour Ca$^{++}$ (15mg/kg) infusion.

Results

Our data defined a significant (p < 0.001) inverse logarithmic relationship

![Graph showing correlation of serum ionised calcium and PTH. Normal subjects](image_url)
between serum Ca\(^{++}\) and PTH-N/C for both normals (Figure 1) and transplant recipients (Figure 2). Similar relationships were also demonstrable using the PTH-C assay. Throughout the range of Ca\(^{++}\) studied, PTH concentrations were significantly higher in the transplants, thus confirming the altered sensitivity of HPTH glands to Ca\(^{++}\). Of note, though, the slopes of the two logarithmic curves did not differ, indicating similar responsiveness of PTH secretion to acute changes in Ca\(^{++}\) for both normal and Tx-HPTH subjects.

**Discussion**

A predictable, inverse, logarithmic (sigmoidal) relationship exists between serum Ca\(^{++}\) and PTH in both normal and Tx-HPTH subjects. A similar relationship has been demonstrated in laboratory animals [3,4]. These results indicate that Tx-HPTH glands are not autonomous and that altered handling of C-terminal fragments does not account for the increased PTH levels often encountered after transplantation.

**References**

1. Chatterjee, SN, Friedler, RM, Berne, TV, Oldham, SB, Singer, FR and Massry, SG (1976) *Nephron*, 17, 1