Changes in PTH, Calcium, and Phosphorous Levels after Parathyroidectomy in Patients on Hemodialysis

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Introduction

- Secondary hyperparathyroidism (SHPT) occurs commonly in patients receiving maintenance hemodialysis (HD).
- Elevated parathyroid hormone (PTH) levels are associated with adverse outcomes.1–6
- Guidelines suggest that dialysis patients with severe SHPT who fail to respond to medical therapy should undergo parathyroidectomy (PTX).
- However, the change in biochemical parameters (PTH, Ca, and P) following PTX has not been rigorously evaluated in a nationally representative group of patients undergoing PTX.

Methods

- A cohort of prevalent adult HD patients who underwent PTX between 2007 and 2009 was identified from the linked database of the USRDS and a large dialysis organization (LDO).
- Patients were required to have Medicare as primary payer for both Parts A and B, and to have been receiving HD for >1 year in a facility of a specific LDO.
- PTX was identified from Medicare claims using ICD-9-CM procedure codes 06.8x and 06.95; the date of PTX procedure was considered the index date.
- Comorbid conditions, assessed in the year before the index date., were defined by previously established USRDS methods.
- Laboratory values (PTH, Ca, and P) and medication use were assessed in the 1-year period before and after PTX.
- Descriptive statistics for continuous variables (median, 25th and 75th percentiles) and categorical variables (count [n], percentage [%]) were used to characterize the population and monthly lab values.

Results

- Median PTH increased from 1039 pg/mL immediately before PTX, and decreased to 98 pg/mL after PTX. Median Ca was typically 9.6 mg/dL before PTX, and decreased to 8.4 mg/dL at 12 months. At 12 months, levels <6.5 mg/dL were still ≤7.1%.
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Discussion

- Generally, PTH rose substantially in the year before PTX.
- However, PTH levels appeared to be within recommended KDIGO targets at the time of PTX for many patients.
- PTH remained very high even after PTX in a substantial fraction of patients, with a phenomenon deserving further study.
- Hypocalcemia occurred frequently after PTX; calcium levels remained very low in a quarter of patients even many months after PTX, suggesting long-term vigilance required.
- P levels fell precipitously following PTX, suggesting that PTH-driven bone resorption contributes substantially to circulating P levels in SHPT.
- Limitations include the facts that we studied only patients who underwent PTX (and thus did not evaluate factors influencing provider decisions to recommend a PTX), and that we did not follow longitudinal laboratory data at the level of the individual patient.