



Characteristics Associated with Parathyroidectomy in Medicare Hemodialysis Patients

Introduction

- Secondary hyperparathyroidism (SHPT) occurs in more than half of patients on hemodialysis (HD)¹
- KDIGO guidelines state that dialysis patients with severe SHPT who fail to respond to medical therapy should undergo a parathyroidectomy (PTX)
- While there is a paucity of data describing the clinical consequences in the year following PTX, we have recently described such outcomes in a large cohort of Medicare dialysis patients²
- However, differences between patients who do and do not undergo PTX have never been rigorously examined
- Our objective was to determine factors associated with PTX

References

- 1 Danese MD et al, Arbor Research Collaborative for Health: Dialysis Outcomes Practice Patterns Study (DOPPS) Practice Monitor, 2013
- 2 Ishani A et al, NKF poster # 100, 2014
- 3 Liu J et al, Kidney Int 77:141, 2010

Methods

- United States Renal Data System (USRDS) data was used to create a cohort of prevalent adult HD patients from 2007-09
- Patients were required to have Medicare as primary payer for both Parts A and Part B, and to have been receiving HD >1 year
- PTX was identified from Medicare inpatient claims using ICD-9-CM (International Classification of Diseases, Ninth Revision, Clinical Modification) procedure codes 06.8x and 06.95
- In each year, an index date was defined as the PTX date for PTX patients, and as January 1 for the non-PTX patients
- Comorbid conditions, assessed in the year prior to index date, were defined by previously established USRDS methods³
- Characteristics of the patients who did and did not undergo PTX were assessed. Models were adjusted for demographics, cause of end stage renal disease (ESRD), body mass index, dialysis vintage, comorbidities, and ESRD Network
- Odds ratios (ORs) for PTX were calculated using logistic regression

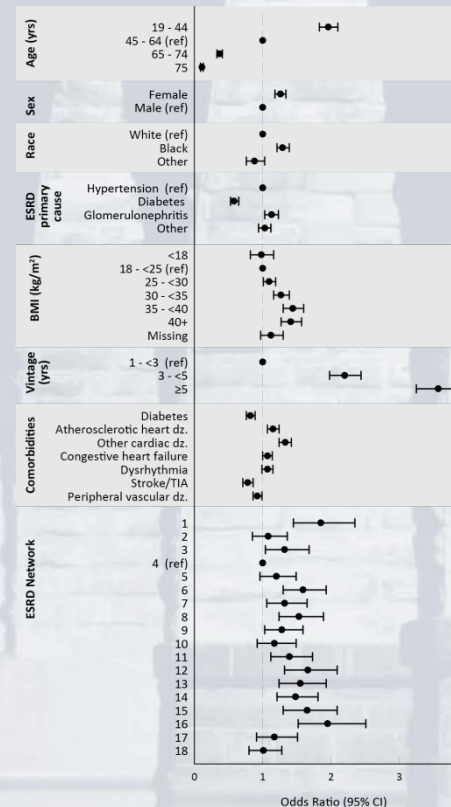
Results

Table 1. Characteristics of the study sample

	PTX		Non-PTX	
	N	%	N	%
Total	4435	100.0	315312	100.0
Age at Index Date, yrs				
19 - 44	1764	39.8	42491	13.5
45 - 64	2154	48.6	122327	38.8
65 - 74	410	9.2	78428	24.9
≥75	107	2.4	72066	22.9
Sex				
Female	2137	48.2	141969	45.0
Male	2298	51.8	173343	55.0
Race				
White	1685	38.0	177172	56.2
Black	2551	57.5	119547	37.9
Other	199	4.5	18593	5.9
ESRD primary cause				
Hypertension	1462	33.0	91459	29.0
Diabetes	1013	22.8	144230	45.7
Glomerulonephritis	934	21.1	29217	9.3
Other	1026	23.1	50406	16.0
Body mass index, kg/m ²				
<18	151	3.4	8775	2.8
18 - <25	1217	27.4	98090	31.1
25 - <30	1026	23.1	88391	28.0
30 - <35	772	17.4	55615	17.6
35 - <40	517	11.7	29455	9.3
≥40	536	12.1	26868	8.5
Missing	216	4.9	8118	2.6
Vintage (Year)				
1 - <3	538	12.1	180882	57.4
3 - <5	970	21.9	62564	19.8
≥5	2927	66.0	71866	22.8
Comorbid conditions				
Diabetes	1954	44.1	210148	66.7
Atherosclerotic heart dz.	1542	34.8	150872	47.9
Other cardiac disease	1623	36.6	108401	34.4
Congestive heart failure	1973	44.5	165233	52.4
Dysrhythmia	1057	23.8	89344	28.3
Stroke/TIA	522	11.8	66567	21.1
Peripheral vascular dz.	1389	31.3	130252	41.3
ESRD Network				
1 (CT, ME, MA, RI, VT)	151	3.4	10805	3.4
2 (NY)	192	4.3	18631	5.9
3 (NJ, PR, US VI)	156	3.5	13423	4.3
4 (DE, PA)	118	2.7	12703	4.0
5 (DC, MD, VA, WV)	260	5.9	19271	6.1
6 (GA, NC, SC)	667	15.0	32222	10.5
7 (FL)	253	5.7	18438	5.9
8 (AL, MS, TN)	364	8.2	19317	6.1
9 (IN, KY, OH)	293	6.6	23592	7.5
10 (IL)	154	3.5	13646	4.3
11 (MI, MN, ND, SD, WI)	252	5.7	20766	6.6
12 (IA, KS, MO, NE)	199	4.5	12781	4.1
13 (AR, LA, OK)	254	5.7	13949	4.4
14 (TX)	487	11.0	31701	10.1
15 (AZ, CO, NV, NM, UT, WY)	182	4.1	13013	4.1
16 (AK, ID, MT, OR, WA)	139	3.1	8118	2.6
17 (So CA)	136	3.1	12694	4.0
18 (No CA, HI, Guam, Samoa)	178	4.0	19242	6.1

PTX, parathyroidectomy; ESRD, end stage renal disease; dz, disease; TIA, transient ischemic attack

Figure 1. Factors associated with parathyroidectomy



As shown in Figure 1, after adjustment, younger age (19-44 yrs, versus 45-64), female sex, black (versus white) race, BMI ≥ 30 kg/m², vintage ≥ 3 yrs, and atherosclerotic heart or other cardiac disease were significantly associated with increased OR for PTX.

Age ≥ 65, diabetes as the cause of ESRD or as a comorbidity, and history of a stroke or TIA were significantly associated with a decreased OR for PTX.

There was a 1.95-fold difference in OR for PTX between the most- and least-frequently PTX-performing regions; 7 regions had an OR > 1.5.

Discussion

- In this large study, we have identified several factors associated with use of PTX
- Patients receiving a PTX have factors that are traditionally associated with more severe SHPT, including black race, younger age, and longer dialysis vintage
- Greater BMI and presence of cardiovascular disease is also associated with PTX
- Geography is also associated with PTX, with a nearly 2-fold variation in OR for PTX among the least- and most-frequently performing networks
- Our study has important limitations. For example, we lacked information on laboratory values and medication use, both of which would be expected to influence likelihood of PTX. Other patient-level characteristics which likely influenced bedside decisions to undertake PTX were also unobservable to us.