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Supplemental Table 1. Clinical characteristics and therapy of participants in a longitudinal bone biopsy study who remained on dialysis

	Patients remaining on dialysis with repeat bone biopsy (n=13)		Patients remaining on dialysis without repeat bone biopsy (n=6)
Clinical Characteristics	at Baseline	Two years after baseline	at Baseline
Men	8 (62)		3 (50)
Median age [IQR], yr	53 [46-65]	55 [48-67]	47 [32-60]
Hemodialysis	9 (69)	9 (69)	4 (67)
Diabetes	3 (23)	3 (23)	1 (17)
Previous kidney transplantation	6 (46)	6 (46)	1 (17)
Previous parathyroidectomy	2 (15)	6 (46)	1 (17)
Left ventricular hypertrophy	4 (31)	4 (31)	3 (50)
Coronary artery disease	0	0	0
CABG/PCI	0	0	0
Heart failure	0	0	0
Occlusive arterial disease	2 (15)	2 (15)	0
Smoking (current and previous)	8 (62)	8 (62)	3 (50)
Transient ischemic attack/stroke	1 (8)	2 (15)	0
Previous fracture	4 (31)	4 (31)	0
Calcium carbonate	11 (85)	10 (77)	5 (83)
Noncalcium -containing phosphate binder	8 (62)	9 (69)	3 (50)
Active vitamin D	9 (69)	10 (77)	6 (100)
Cinacalcet	1 (8)	3 (23)	0
Bisphosphonate	0	1 (8)	2 (33)
Current corticosteroid use	1 (8)	2 (15)	1 (17)

Data are displayed as n (%) unless otherwise indicated. IQR, interquartile range; CABG/PCI, coronary artery bypass graft/percutaneous coronary intervention

Supplemental Table 2. Median daily doses of mineral metabolism medication in patients remaining on dialysis

	Patients remaining on dialysis with repeat bone biopsy (n=13)		Patients remaining on dialysis without repeat bone biopsy (n=6)	
Variables	at Baseline	Two years after baseline	at Baseline	Two years after baseline
Calcium carbonate (mg)	750 (500-1500) ^a	1250 (500-1625) ^b	2000 (1000-2500) ⁱ	1500 (1250-2500) ⁱ
Alphacalcidol (µg)	0.5 (0.2-0.6) ^c	0.3 (0.2-0.5) ^d	0.3 (0.1-1.0) ⁱ	0.4 (0.1-0.4) ^j
Paricalcitol (µg)	1.4 (0.9-3.2) ^e	1.8 (1.4-1.8) ^f	1.4 ^g	0.9 ^g
Cinacalcet (mg)	120mg ^g	60(15-60) ^h	N/A	60 ^g

All values are expressed as median (interquartile range)

N/A= not applicable

a n=11; b n=10; c n=4; d n=8; e n=5; f n=2; g n=1; h n=3; i n=5; j n=3

Supplemental Table 3. Bone histomorphometric parameters of participants in a longitudinal bone biopsy who remained on dialysis

Bone parameter	All patients remaining on dialysis (n=19)	Patients remaining on dialysis with repeat bone biopsy (n=13)		P value*
	at Baseline	at Baseline	Two years after baseline	
Bone formation rate/bone surface ($\mu\text{m}^3/\mu\text{m}^2$ per year)	24.5 (8.6-32) ^a	28.8 (7.2-32) ^e	23.6 (13.5-32.9) ^g	0.69
Activation frequency (1/year)	0.47 (0.18-0.84) ^a	0.45 (0.14-0.88) ^e	0.68 (0.33-1.02) ^g	0.5
Osteoblastic surface/bone surface (Z- score)	0.1 (-1.6-9.9) ^b	-0.6 (-1.9-12.6) ^f	-1.3 (-2.8 to -0.6)	0.11
Osteoclastic surface/bone surface (Z- score)	10.8 (1.9-19.6) ^b	12.3 (1.4-20.1) ^f	0.02 (-2.0- 3.3)	0.13
Osteoid surface/bone surface (%)	46.3 (36.6-57.2) ^c	48.6(35.2-58.8)	43.1(14.5-49.2)	0.13
Osteoid thickness (μm)	8 (6.2-9.9) ^c	8.3 (6.7-10.6)	7 (6.6-12.1)	0.42
Mineralization lag time (d)	77.2 (46.7-183.2) ^a	60.3 (49.8-179.5) ^e	61.6 (26-90.5) ^g	0.89
Bone volume/ tissue volume (%)	21.4 (17.3-30.5) ^d	21 (17.4- 30.4)	18.5 (14.2-25.4)	0.08
Lumbar spine T-score	-1.3 (-2.2-0.2) ^b	-0.9 (-2.2-1.0) ^f	-0.3 (-1.7-1.1) ^f	0.96
Femoral neck T- score	-0.8 (-1.7-0.3) ^b	-0.6 (-2.5 to -0.4) ^f	-1.6 (-2.4 to -0.1) ^f	0.04*

All values are expressed as median (interquartile range)

* P -value compares values after 2 further years of dialysis to values at baseline among patients remaining on dialysis with repeat bone biopsy

a n=12; b n=16; c n=18; d=17 ; e n=7; f=11; g=8

Supplemental Table 4. Biochemical parameters in 13 patients remaining on dialysis with repeat bone biopsy at baseline and after two further years of dialysis.

Variables	Baseline	Two years after baseline	P value
(normal range)			
Ca²⁺ mg/dl per pH7.4 (4.64-5.2)	4.72 (4.3-4.86)	4.60 (4.32-4.98)	0.46
Inorganic phosphate mg/dl (2.19 -3.81)	5.73 (3.86-7.40)	6.07 (4.74-6.88)	0.28
PTH pg/ml (15-65)	355 (144-636)	132 (92-246)	0.10
D-25-OH ng/ml (>16)	9.2 (7.61-25.6)	25.6 (13.2-34.5)	0.12
D-1,25 pg/ml (22.9-76.3)	7.9 (3.1-14.6)	11.7(7.1-25.4)	0.03*
bone specific alkaline phosphatase µg/l (6-15)	9.3 (8.5-19)	14(10.5-21.5)	0.45
osteocalcin ng/ml (14-46)	150 (65-260)	130(70-206)	0.53

All values are expressed as median (interquartile range). Conversion factors for units: plasma ionized calcium in mg/dl to mmol/l x 0.25; inorganic phosphate in mg/dl to mmol/l x 0.3229. Intact parathyroid hormone levels pg/ml and ng/l are equivalent. 25-hydroxyvitamin D in ng/ml to nmol/l x 2.496; 1,25-dihydroxyvitamin D pg/ml to pmol/l x 2.4. Osteocalcin ng/ml and µg/l are equivalent. Ca²⁺, ionized calcium; PTH, parathyroid hormone; 25(OH) D, 25-hydroxyvitamin; D-1,25 (OH)₂ D, 1,25-dihydroxyvitamin.

*Statistically significant