THE EFFECT OF SHORT-TERM NUTRITIONAL VITAMIN D SUPPLEMENTATION ON HYPERCALCAEMIC VITAMIN D INSUFFICIENT RENAL TRANSPLANT RECIPIENTS

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Introduction

Vitamin D insufficiency is highly prevalent amongst renal transplant recipients(1,2,3). Hypercalcaemia, usually due to persistent secondary hyperparathyroidism, commonly occurs in this population and often coexists with Vitamin D insufficiency (4). Concern that Vitamin D supplementation might exacerbate the pre-existing hypercalcaemia often leads clinicians to avoid Vitamin D supplementation in such patients. This feasibility study aimed to quantify the effect on serum calcium of short-term low dose cholecalciferol supplementation in a group of hypercalcaemic renal transplant recipients.

Methods

We conducted a two-week, single arm, open-label trial of 1,000 IU/day cholecalciferol supplementation in 18 hypercalcaemic Vitamin D insufficient adult patients with functioning renal transplants (eGFR >30 ml/min/1.73 m^2). At baseline, and following 2 weeks of daily supplementation with 1,000 IU cholecalciferol, serum creatinine, eGFR, calcium, phosphate, iPTH, albumin, 25(OH)cholecalciferol and 1,25-dihydroxycholecalciferol, fibroblast growth factor-23 (FGF23) and urinary calcium and creatinine were measured. Subjects were counselled to maintain their usual diet.

Results

Table 1: Characteristics of study participants (n=18)

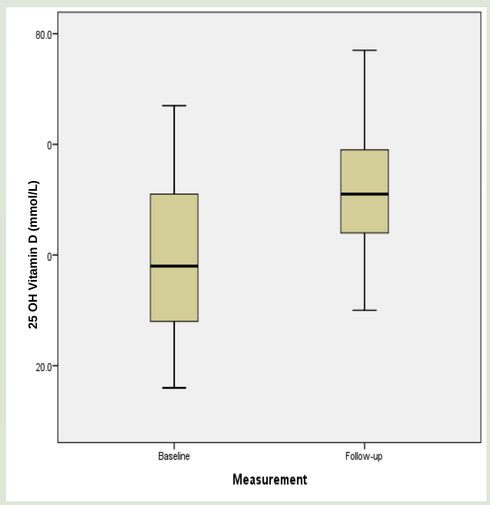
Parameter	Value
Age (yr), mean (SD)	53.0 (13.0)
Male gender, n (%)	13 (72%)
eGFRml/min/1.73m^2 mean (SD)	55.7 (11.9)
BMI (kg/m^2), mean (SD)	26.5 (4.9)
Diabetes mellitus, n (%)	4 (22%)
Reported usage of fortified foods, n(%)	1 (5%)
Reported regular usage SPF, n (%)	17 (94%)
Time since transplant (yr), mean (SD)	7.6 (4.8)

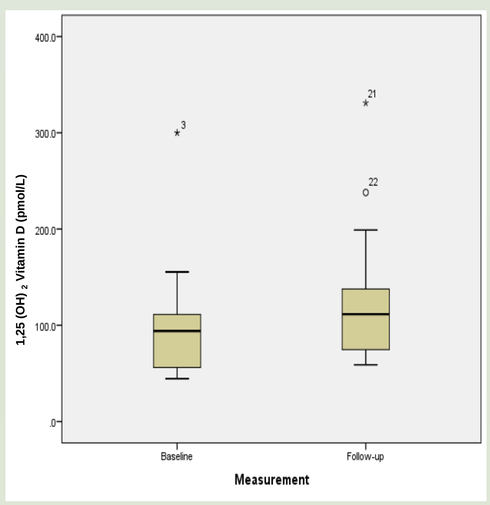
eGFR estimated glomerular filtration rate; BMI body mass index; SPF sun protection factor

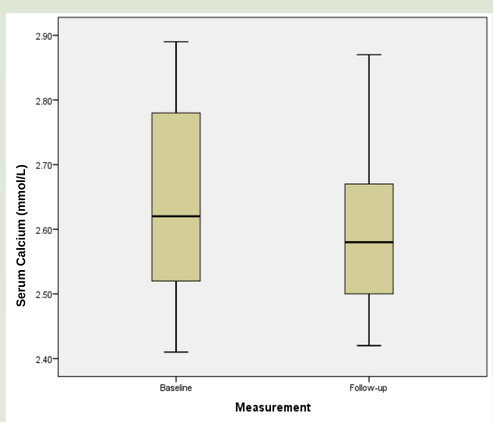
Table 2: Baseline and post-intervention serum and urinary parameters

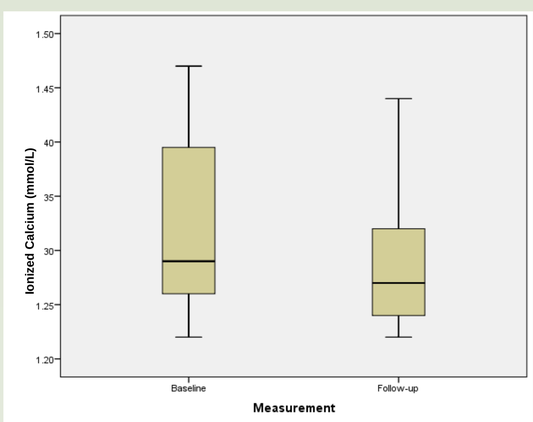
Parameter	Baseline Mean (sd)	Final mean (sd)	P
25(OH) cholecalciferol (nmol/L) [n=16]	39.6 (14.9)	51.9 (12.3)	<0.001
1,25 $(OH)_2$ cholecalciferol pmol/L) [n=15]	100.2(±63.8)	118.5 (69.9)	0.05
Calcium (mmol/L)	2.63(0.15)	2.61(0.12)	0.33
Ionised calcium (mmol/L) [n=18]	1.31(0.08)	1.29(0.07)	0.05
Phosphate (mmol/L)	0.83(0.11)	0.88(0.17)	0.08
PTH (ng/L)	127.5 (71.9)	119.5 (57.8)	0.74
FGF23(RU/ml)	143.2 (45.0)	141.6 (40.3)	0.90
24 hour urinary calcium (mmol/24 hours)	3.85 (2.41)	4.55 (3.05)	0.09
Calcium:creatinine ratio (mmol/mmol)	0.44(0.36)	0.42 (0.28)	0.88

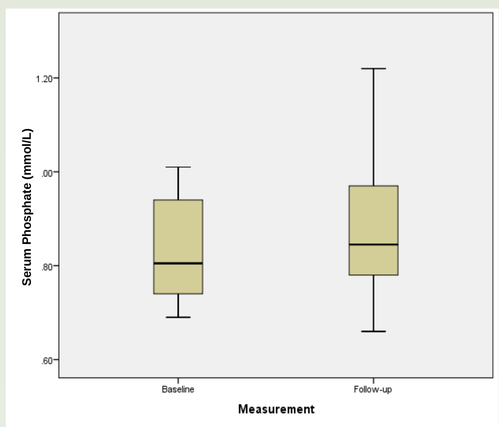
Figure 1: Change in median values pre and post intervention

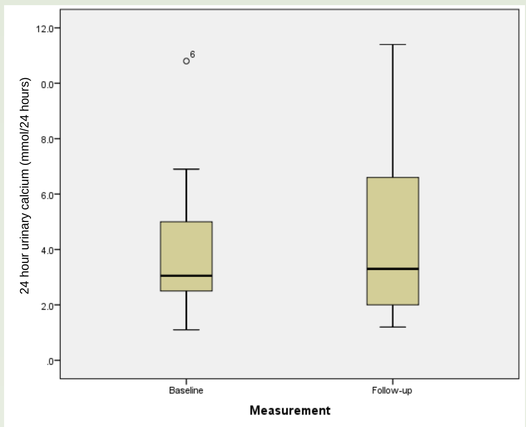












Conclusion

Short-term physiological dose of cholecalciferol in hypercalcaemic renal transplant recipients successfully repleted Vitamin D insufficiency without exacerbating hypercalcaemia.

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