

## Risk Factors Predicting the Use Of Cinacalcet In Post Kidney Transplant Patient

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### Introduction

Persistent hyperparathyroidism after kidney transplantation (KT) is common, reported up to 50% of kidney transplant patient. It is associated with short term and long-term complications. Cinacalcet is therapy of choice but associated with side effects and high cost.

### Objectives

This study is to identify clinical risk factors for post KT hyperparathyroidism which requires cinacalcet therapy.

### Methods

This is a retrospective observational study involving all adult patients who underwent successful KT from 1st January 2020 till 31st December 2022. Patients with complete investigation result were included. Patient were divided into two groups based on cinacalcet requirement post KT: Group A-patients who required Cinacalcet and Group B- patients who didn't require Cinacalcet post KT). Requirement for cinacalcet is determined by the managing physicians. The indications to initiate cinacalcet are persistent hyperparathyroidism with hypercalcemia. The following parameters were collected: Age, sex, body mass index(BMI), dialysis vintage, pre and post KT iPTH, serum alkaline phosphatase (ALP), serum calcium, serum phosphate, the use of cinacalcet pre and post KT and parathyroidectomy pre-KT. The result was analysed with SPSS version 28.

### Results

A total of 137 patients were included. Seventy-one (51.9%) were male. One hundred thirteen (82.5%) were in group A and 24(17.5%) were in group B. Mean pre-KT iPTH for group A and group B were 33.7pmol/l (27.4 – 40, CI 95%) and 68.9 (50-87, CI 95%), with  $P < 0.01$ , OR 1.02. Mean pre-KT ALP were 182.8U/L(130-235, CI 95%) and 104(92-115, CI 95%) for group A and B respectively,  $P < 0.01$ , OR 1.001. Mean pre-KT serum calcium for group A and B were 2.52mmol/L(2.4-2.61, CI 95%) and 2.3(2.29-2.37, CI 95%), with  $P < 0.001$ . Mean post-KT ALP were 200U/L(157 – 243, CI 95%) and 104(94-113, CI 95%) for group A and B,  $P < 0.004$ , OR 1.017. Mean post-KT serum phosphate for group A and B were 0.79mmol/L(0.7-0.8, CI95%) and 0.93(0.88-0.99, CI95%) respectively,  $P < 0.05$ , OR 1.13.

Parameters	Group A	Group B	P value
Age (years)	34	37.9	0.12
Sex (N, %)			
Male	16 (11.6)	55 (40)	
Female	8 (6.1)	58 (42.3)	0.10
BMI	22.3	22.4	0.87
Dialysis vintage (years)	5.32	5.26	0.96
Pre-KT use of cinacalcet (N, %)			
Yes	1 (0.7)	0 (0)	1
No	23 (16.8)	113 (82.5)	
Parathyroidectomy (N,%)			
Yes	2 (1.6)	12 (8.8)	0.74
No	22 (16)	101(73.6)	
iPTH (pmol/L)	70.0	33.7	<0.001
ALP (U/L)	182.8	104.00	<0.001
serum calcium (mmol/L)	2.52	2.33	<0.001
Serum Phosphate (mmol/L)	2.42	1.67	<0.001
Post-KT ALP (U/L)	200	104	<0.001
Serum calcium (mmol/L)	2.56	2.3	<0.001
Serum Phosphate (mmol/L)	0.79	0.93	0.03

### Conclusions

High pre-KT iPTH, ALP, serum calcium, post kidney transplant ALP, serum calcium and low serum phosphate are strongly associated with the use of cinacalcet post KT. Base on this study, patient who develop tertiary hyperparathyroidism (High pre-KT iPTH, serum ALP, calcium and phosphate) should be treated accordingly. Pre-KT parathyroidectomy did not prevent the use of cinacalcet post-KT in our study, however this could be as result of small sample size. Future study with more sample size is needed.