

A novel calcium infusion regimen after parathyroidectomy for renal hyperparathyroidism

ABSTRACT

AIM: Calcium infusion is used after parathyroid surgery for renal hyperparathyroidism to treat postoperative hypocalcaemia. We compared a new infusion regimen to one commonly used in Malaysia based on 2003 K/DOQI guidelines. **METHODS:** Retrospective data on serum calcium and infusion rates was collected from 2011-2015. The relationship between peak calcium efflux (PER) and time was determined using a scatterplot and linear regression. A comparison between regimens was made based on treatment efficacy (hypocalcaemia duration, total infusion amount and time) and calcium excursions (outside target range, peak and trough calcium) using bar charts and an unpaired t-test. **RESULTS:** Fifty-one and 34 patients on the original and new regimens respectively were included. Mean PER was lower (2.16 vs 2.56 mmol/h; $P=0.03$) and occurred earlier (17.6 vs 23.2 h; $P=0.13$) for the new regimen. Both scatterplot and regression showed a large correlation between PER and time (R-square 0.64, SE 1.53, $P<0.001$). The new regimen had shorter period of hypocalcaemia (28.9 vs 66.4 h, $P=0.04$), and required less calcium infusion (67.7 vs 127.2 mmol, $P=0.02$) for a shorter duration (57.3 vs 102.9 h, $P=0.001$). Calcium excursions, peak and trough calcium were not significantly different between regimens. Early postoperative high excursions occurred when the infusion was started in spite of elevated peri-operative calcium levels. **CONCLUSION:** The new infusion regimen was superior to the original in that it required a shorter treatment period and resulted in less hypocalcaemia. We found that early aggressive calcium replacement is unnecessary and raises the risk of rebound hypercalcemia.

Keyword: Calcium gluconate; Hypocalcaemia; Renal insufficiency; Secondary hyperparathyroidism; Surgery