

Feline Hyperthyroidism: Managing Post Operative Hypocalcaemia

A major complication of thyroidectomy is subsequent hypocalcaemia. The cause is not always clear; although damage to parathyroid tissue due to poor surgical technique or misfortune may occur it is known that hyperthyroid cats often have high parathyroid hormone (PTH) levels and a drop in PTH may be expected in some individuals just from removal of thyroid tissue. All cats should be closely observed for a week post thyroidectomy and have serum/ plasma total calcium levels monitored for three days. Good surgical practice, staged unilateral procedures at a three-week interval and burial of any excised parathyroid tissue in adjacent muscle are all likely to prevent permanent hypoparathyroidism.

The clinical signs of hypoparathyroidism occur in one to seven days after surgery; they result from hypocalcaemia and include: decreased appetite, facial rubbing, muscle twitching, panting, weakness, nervousness, stiff gait, seizures and tetany. Low blood calcium without clinical signs does not require treatment but may indicate the requirement for enhanced observation, monitoring and prolonged hospitalization.

Therapy for hypocalcaemia due to hypoparathyroidism follows two strands: calcium to initially stabilise blood levels and then to ensure ample calcium intake and vitamin D, or an analogue, to control blood calcium level more chronically. Calcium must be given according to need: if there are life-threatening signs of hypocalcaemia then the calcium may be given slowly i/v (*calcium gluconate 10% 0.5-1.5 ml/kg*) over 10 minutes, with concurrent ECG (or at least stethoscope) monitoring; infusion must stop if there is a bradycardia. Subsequently, s/c calcium gluconate is given (*1-2 ml 10% calcium gluconate diluted 1:1 with saline s/c tid*); and then oral calcium carbonate (*0.25 to 1 gm/day oral divided dose*). The most active form of vitamin D is calcitriol (*1,25-dihydroxycholecalciferol*) [*Rocaltrol, Roche*], the dose is 0.01-0.03 ug/kg po sid; however, it is manufactured in inconvenient 0.25 ug capsules (containing a liquid). Another active form is alfacalcidol [*One-Alpha, Leo*], the dose is 0.05 ug/kg po sid and it is available as a liquid. Alternatively, dihydrotachysterol [AT10, Sanofi Winthrop] at 0.02-0.03 mg/kg sid for 2-3 days, then 0.01-0.02 mg/kg/day with adjustments based on the blood total calcium. Calcitriol and alfacalcidol take 1-4 days to reach peak activity from commencement of therapy, dihydrotachysterol takes 1-7 days, and during this time parenteral calcium therapy is necessary. Once stable, the blood calcium is measured every week and the dose of the vitamin D supplement is adjusted by about 20%, as necessary, to maintain the calcium in the low-normal range. Calcitriol and alfacalcidol cease to affect calcium levels a day after withdrawal; however, dihydrotachysterol takes 1-3 weeks to have no activity.

The owners must be informed about the clinical signs of hypercalcaemia (*anorexia, lethargy, vomiting*). If iatrogenic hypercalcaemia develops the medications are discontinued until calcium falls to the low-normal range, i/v saline and frusemide may be administered. Vitamin D and calcium medications are only reinstated if hypocalcaemia reoccurs and then at a 20% reduced dose. The medications can usually be gradually withdrawn, starting after 3-4 weeks, and with a monitored reduction in dose of 25-50% each week. Rarely does medication have to be continued indefinitely.