Laboratory Assessment of Calcium Disorders in Dogs and Cats

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OBJECTIVES

Serum parathyroid hormone (PTH) and ionised calcium (iCa), are seldom initially available when assessing dogs with high serum total calcium (tCa). The serum calcium-phosphate product (CaxP; $>72\text{mg}^2/\text{dL}^2$ ($5.6\text{mmol}^2/\text{L}^2$)) is a suggested indicator of risk of soft tissue mineralisation in hypercalcaemic and hyperphosphataemic disorders, although the ionised calcium-phosphate product (iCaxP) may be more appropriate. The aims of this study were 1) assess the diagnostic usefulness of routinely available parameters for classifying hypercalcaemia in dogs, 2) evaluate tCa and albumin-adjusted calcium (adjCa) for predicting iCa determined calcium status and 3) derive iCaxP cut-off values for dogs and cats.

METHODS

Anonymised data from 375 dogs and 181 cats investigated for calcium disorders at a UK endocrinology

laboratory were classified into; primary hyperparathyroidism, parathyroid independent hypercalcaemia, secondary hyperparathyroidism and primary hypoparathyroidism, based on iCa and PTH concentrations. Statistical analysis was performed using a statistical software, Minitab.

RESULTS

Age (AUC-ROCC = 0.777), phosphorous (AUC-ROCC = 0.771) and albumin (AUC-ROCC = 0.660) were useful parameters in discriminating between primary hyperparathyroidism ($>10\text{yrs}$, $<0.74\text{mmol/L}$, $>32\text{g/L}$) and parathyroid independent hypercalcaemia in dogs ($<7\text{yrs}$, $>0.74\text{mmol/L}$, $<29\text{g/L}$).

Diagnostic agreement of tCa with iCa was 83% and 90% in dogs and cats respectively and 38% for albumin-adjCa in dogs.

Cut off values of $2.71\text{mmol}^2/\text{L}^2$ in dogs and $2.87\text{mmol}^2/\text{L}^2$ in cats for iCaxP (equivalent to CaxP = $5.6\text{mmol}^2/\text{L}^2$) were derived.

STATEMENT (CONCLUSIONS)

Age, phosphorous and albumin may help narrow differential diagnosis in canine hypercalcaemia prior to availability of iCa and PTH. The use of canine albumin-adjusted calcium should be abandoned. Cut-off values for iCaxP are now available for clinical evaluation.

A retrospective study on hypophysectomy in feline acromegaly

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OBJECTIVES

- To determine the impact of hypophysectomy on the management of insulin-resistant diabetic cats that are refractory to treatment
- To evaluate patient quality of life following hypophysectomy and identify changes in social and emotional behaviours.

METHODS

Data was collected retrospectively from the medical records of 76 acromegalic diabetic cats undergoing hypophysectomy between April 2012 and February 2019 at the Royal Veterinary College. In addition to reviewing

basic patient data, a questionnaire intent on evaluating quality of life after surgery was distributed to all owners and the responses collated and reviewed.

RESULTS

Post-operatively, there was a significant decrease in IGF-1 concentration ($p \leq 0.01$), fructosamine concentration ($p \leq 0.05$) and insulin dose ($p \leq 0.01$). A total of 70.1% ($n = 47$) of patient's no longer required insulin whilst a further 25.4% ($n = 17$) required significantly reduced insulin dosage. The following changes were reported by the owners of hypophysectomised cats: weight gain (59%, $n = 22$), polyphagia (49%, $n = 18$), lethargy (46%, $n = 17$), polydipsia and polyuria (35%, $n = 13$). Behavioural changes after surgery included: decreased interaction with other pets (48%, $n = 14$), increased vocalisation and attention seeking (46%, $n = 17$), increased attention and interaction with people (41%, $n = 15$) and decreased playfulness (41%, $n = 15$).

STATEMENT (CONCLUSIONS)

This study demonstrates that hypophysectomy can resolve diabetes mellitus in a high proportion of diabetic cats with hypersomatotropism. Moreover, a number of social and emotional behavioural changes were identified post-operatively necessitating further investigation into the overall quality of life of hypophysectomised cats.