A 9-year-old male neutered Cockerpoo crossbred dog was initially presented for investigations of pyrexia. The dog was diagnosed with Sweet’s-like syndrome. During initial investigations, advanced imaging revealed a suspected left-sided paraganglioma and bilateral adrenal masses. Surgical excision involving bilateral adenectomy and subsequently the paraganglioma, were performed. Histopathology identified bilateral adrenocortical carcinoma and cervical neuroendocrine carcinoma. Three months later, the dog was diagnosed with primary hyperparathyroidism on incidental hypercalcemia, increased PTH and a left parathyroid gland mass. Despite left total thyroidecmy and partathyroidectomy, the dog remained mildly hypercalcemic for several months. Eight months later, persistent hypokalaemia refractory to potassium supplementation, metabolic alkalosis and systemic hypertension were diagnosed. The dog was euthanased five months later due to clinical deterioration. On post-mortem examination, right parathyroid hyperplasia and metastatic neuroendocrine carcinoma involving liver, jejunum, pancreas and tracheobronchial lymph node were identified. This is the first report describing the concurrent presence of these types of endocrine neoplasias in a dog.


diagnosis

A 9-year-old male neutered Cockerpoo crossbred dog was initially presented for a two-weeks history of lethargy, waning and wasting pyrexia, increased breathing rate intermittently and hyporexia. Initial CBC and serum biochemistry revealed leukocytosis (11.8 x 10^9/L; RI: 2.5-11 x 10^9/L), increased creatinine (1.47 mg/dL; RI: 0.6-1.6 mg/dL) and decreased serum albumin (2.1 mg/dL; RI: 2.8-3.6 mg/dL). A diagnosis of hyperparathyroidism was made based on ionized hypercalcaemia, increased PTH and a left parathyroid gland mass. Despite left total thyroidecmy and parathyroidectomy, the dog remained mildly hypercalcemic as the remaining parathyroid tissue was hyperplastic. Abnormal values are in bold red. The dog died six months later due to SIRS (systemic inflammatory response syndrome).


discussions and conclusions

This case could represent a potential variant of MEN type 1, based on the presence of hyperparathyroidism, adrenocortical tumour and neuroendocrine tumour cells within cortical body tissue. Given the adrenal masses were histologically adrenocortical carcinoma and the urine sample was collected in stress-free environment, the paraganglioma could have been functional. Hyperparathyroidism could be due to a functional neuroendocrine primary or metastatic disease, since the dog remained hypokalemic 90 days post last dose of DOCP and spironolactone supplementation

The simultaneous occurrence of multiple endocrine neoplasias in different organs is strongly suggestive of an association between these tumours

The most common post-operative complications associated with paraganglioma surgery include Horner’s syndrome and laryngeal paralysis

Tumour combinations affecting companion animals might differ from the well-documented MEN syndrome described in human medicine

A complete diagnostic evaluation including hormonal tests, advanced imaging and histopathology should be performed in any animal diagnosed with one or more endocrine neoplasms


References