Testosterone concentrations in 37 dogs: breed differences and the effect of passive smoke exposure

Clare Knottenbelt, Natalie Hutchinson, Dominic Mellor

College of Medical, Veterinary and Life Sciences, University of Glasgow, Glasgow, Scotland, UK

INTRODUCTION

Testosterone concentrations (T) are important in determining dominance behaviours in humans. In dogs castration changes behaviours in 50–60% of dogs (increased body-weight, increased appetite and decreased activity). Chronic direct smoking reduces canine T significantly, however the impact of environmental tobacco smoke (ETS) exposure on canine health is currently poorly characterised. Hair nicotine concentration (HNC) is an accurate method of determining ETS exposure in dogs. The data presented is part of larger study to assess the impact of ETS exposure on ageing markers in pet dogs in a home environment. The study has been approved by the local Ethics and Welfare committee.

MATERIALS AND METHODS

37 entire male dogs were recruited and underwent physical examination (including body weight and condition score) and routine bloods prior to and 12 months post routine castration. 24 dogs were reassessed at 12 months post

castration. T was measured in discarded plasma by ELISA (T1 and T2). HNC was measured using LC-MS/MS at both time points.

RESULTS

The dogs comprised 7 Staffordshire bull terrier (SBT), 2 SBT crossbreds, 7 non-SBT crossbreds, 4 Border collies, 2 CKC spaniels, 2 Yorkshire Terriers and 2 Springer spaniels. Only 2 dogs in the SBT group returned for the 12 month check. Ages ranged from 5.5 months–7.5 years (median = 11.5 months). Pre-castration T ranged from 1.0 nmol/l to ≥ 56 nmol/l (median = 43 nmol/l). Neither T1 or T2 correlated with age or weight. T1 was significantly higher in SBT and SBT crosses when compared to the other breeds ($p=0.001$). T1 was significantly lower in pre-pubescent dogs compared to pubescent and post-pubescent dogs ($p=0.04$).

T2 ranged from 0.72–2.43 nmol/l (median = 1.71 nmol/l) and was not associated with T1. T2 was inversely associated with increased weight in 24 dogs over the 12 month period ($p=0.028$, $R^2=0.20$). Although there was no association between T and HNC at either time point, proportional weight gain at 12 months post castration was significantly associated with HNC ($p=0.03$, $R^2=0.20$).

CONCLUSIONS

SBT and SBT crosses have higher pre-castration T which could explain their breed associated behavioural traits. T levels are not associated with ETS exposure as measured by HNC, however weight gain post castration may be affected by both ETS exposure and lower post-castration T (which is not associated with T1).

Clinical and clinicopathological features in dogs with recently diagnosed uncomplicated spontaneous hyperadrenocorticism in first opinion practice (2013–2014)

Michael Bennaim³, Steven Centola², Ian Ramsey², Mayank Seth¹

¹ Animal Health Trust, Kentford, Newmarket, Suffolk, UK

² University of Glasgow, Faculty of Veterinary Medicine, Glasgow, Scotland, UK

³ University College Dublin, Faculty of Veterinary Medicine, Belfield, Co. Dublin, Ireland

Clinical signs and clinicopathological findings of spontaneous hyperadrenocorticism (HAC) were reported several decades ago. Since that time several reviews and texts have commented that large breeds of dogs with HAC show less clinical features than smaller breeds and that the prevalence of various signs may be lower nowadays, with diagnosis made at earlier stages.

An online questionnaire was made available to veterinarians in the United Kingdom and the United States to gather

information pertaining to signalment, clinical signs, physical examination findings and clinicopathological abnormalities of dogs diagnosed with HAC in first-opinion practices. Inclusion criteria were an ACTH stimulation test and/or low-dose dexamethasone suppression test consistent with HAC. Exclusion criteria included known concurrent systemic diseases or any sign not typically associated with HAC (e.g., vomiting, diarrhoea), a low urinary cortisol:creatinine ratio, possible administration of steroids over the 3 months before diagnosis or treatment with a drug known to cause the investigated clinical signs. For each case, a clinical signs ratio (CSR) was calculated for the number of clinical signs present out of the total number reported to have been assessed in that case.

Sixty-two cases were identified. The prevalences of clinical signs and clinicopathological abnormalities were similar to previously reported. There was no correlation between the weight and the CSR and no difference between the CSR in small breeds (< 20 kg) ($n=40$) and large breeds (> 20 kg) ($n=21$). The prevalence of nocturia, polyphagia, abdominal enlargement, alopecia, hyperpigmentation, recurrent pyoderma, lethargy, excessive panting, muscle weakness and muscle atrophy were not statistically different in large breeds and smaller breeds. The platelet count was negatively correlated to the weight ($p=0.005$). Alanine aminotransferase (ALT) ($p=0.016$, $r^2=0.17$) and alkaline phosphatase (ALKP) ($p=0.05$, $r^2=0.0014$) activities were both positively correlated to the CSR.