Other causes of IMHA were excluded with history, physical examination, serum biochemistry, haematology and imaging before inclusion into the study.

RESULTS

The packed cell volume significantly increased following treatment of primary IMHA (median pre 0.13 L/L, median post 0.33 L/L) ($p=0.0001$). The serum cardiac troponin I concentrations significantly decreased after treatment (median pre 0.26 ng/ml, median post 0.16ng/ml) ($p<0.05$). Dogs with an improvement in PCV of ≥ 0.14 L/L had a significantly larger median reduction of serum cTnI concentrations (0.51 ng/ml) compared to a median reduction of 0.01ng/ml in dogs whose PCV had increased by less than 0.14 L/L ($p=0.04$).

CLINICAL SIGNIFICANCE

This study demonstrates that evidence of subclinical myocyte damage decreases following the successful treatment of primary IMHA. It also demonstrates that dogs with a greater improvement in packed cell volume had the greatest reduction in cTnI. This suggests that the improvement of anaemia was likely to be the driving force for the reduction in the evidence of myocardial damage.

This study advances knowledge of the cardiovascular complications which occur in anaemic dogs and may lead to future investigations into the prognostic significance of serum cardiac troponin I concentrations before and after treatment in dogs with primary IMHA.

Does pulse CO-oximetry yield accurate and precise haemoglobin measurements in conscious dogs?

**James Swann, Amy Hughes,
Yu-Mei Chang, Oliver Garden**

Royal Veterinary College, Hatfield, UK

INTRODUCTION

Anaemia is a common problem in dogs and cats presenting to veterinary practices, but diagnosis currently relies on collection of blood samples by venepuncture. In human medicine, recent advances in pulse CO-oximetry permit non-invasive estimation of haemoglobin concentration using a multi-wavelength sensor probe. The aim of the current study was to test the hypothesis that haemoglobin measurements obtained from the Masimo Radical 7 pulse CO-oximeter would yield accurate and repeatable values when compared to conventional CO-oximetry on contemporaneous blood samples.

METHOD

Pulse CO-oximetry measurements were made from dogs presenting consecutively to a single tertiary referral institute for medical investigations or surgical procedures. Measurements were made by holding the probe of the Masimo Radical 7 pulse CO-oximeter in the interdigital web of conscious dogs until a haemoglobin measurement was obtained. Duplicate measurements were made from a subset of dogs, with an

interval of five minutes between readings. All measurements were made by a single operator. Owners gave informed consent for the pulse CO-oximeter to be used on their dogs, and the study received approval from an ethical review committee.

The pulse CO-oximetry measurements were made within thirty minutes of venepuncture for collection of blood samples. Haemoglobin concentration was measured in heparinised blood samples using the NOVA Biomedical pHox Ultra CO-oximeter, which utilises multi-wavelength spectrophotometry.

RESULTS

Haemoglobin was measured 17 times by pulse CO-oximetry in 10 different dogs. A further 51 measurements were attempted unsuccessfully, so that 25.0% of attempts resulted in haemoglobin measurement. Duplicate readings were obtained in 7 dogs, for which the intra-class correlation coefficient was 0.541 (95% confidence interval -0.21 to 0.90).

Values obtained by the two CO-oximetry methods were correlated (R^2 0.656, $p<0.001$). Bland Altman analysis was constructed to determine whether measurements from the pulse CO-oximeter agreed with those obtained by conventional CO-oximetry. The mean difference between pulse CO-oximeter measurements from the pooled measures was 1.48 g/dl, with upper and lower limits of agreement of 4.21 and -1.25, respectively.

CONCLUSION

This pilot study shows that pulse CO-oximetry may be used to estimate haemoglobin concentration in conscious dogs, but limits of agreement were wide when compared to a conventional method and readings could not be obtained from a large proportion of the dogs in which the procedure was attempted.

Delivered by BSAVA to:

Guest (guest)

IP: 34.229.45.116

On: Wed, 26 Apr 2023 06:59:46