Oral presentations

Does the colour intensity of a blood spot image obtained by smartphone accurately correlate with canine packed cell volume (PCV)

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OBJECTIVES

To evaluate the utility of smartphone images in extrapolating a patient's PCV.

METHODS

Samples were obtained using canine EDTA blood surplus after clinical testing. A single drop was placed on filter

paper, using a standard plastic pipette, and left for 30 seconds. The paper was then placed in a box with a standardized light source, and photographed with an iPhone 6S. Four images were taken. Each sample also had concurrent manual PCV measurement performed according to WHO guidelines. Colour intensity was measured using Image J in the largest homogenous area of the drop, the mean value from the four images was recorded. A scatter plot was generated using the obtained data, plotting the actual PCV against the average colour intensity. An additional ten samples were then evaluated with their colour intensity value inserted into the equation of the line generated, using the line of best fit.

RESULTS

Sixty samples were used to generate the plot. This yielded a R^2 value of 0.9037. For the 10 samples, the mean difference between the predicted and actual PCV was -3.6%. When these 10 samples were added to the data set the R^2 remained at 0.9037.

STATEMENT

This technique showed an excellent correlation with the patient's PCV. If this technique can be further automated to be performed all within the smartphone, this would be of great use, particularly in low resource settings.

Whole blood manganese concentrations in anaemic dogs with inflammatory bowel disease or confirmed iron-deficiency anaemia

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OBJECTIVES

Manganese is an essential trace element, however excess manganese leads to neurotoxicity in many species.

Dietary Mn is efficiently adsorbed through the gastrointestinal tract via divalent metal transporter 1 (DMT1) which is also responsible for iron transport. DMT1 is upregulated in iron deficiency and iron-deficiency anaemia has been associated with increased manganese concentrations in humans with reports of resultant neurotoxicity. The goal of this study was to evaluate if manganese concentrations in anaemic dogs with inflammatory bowel disease or confirmed iron-deficiency, were elevated compared to non-anaemic ill or healthy controls.

METHODS

Manganese concentrations were determined by graphite furnace atomic absorption spectrometry in whole blood anticoagulated with ethylenediaminetetraacetic acid, from 36 dogs: 11 anaemic with inflammatory bowel disease, 4 anaemic with iron-deficiency, 9 non-anaemic ill controls, and 12 healthy controls. Mann-Whitney U test and Kruskal-Wallis test with post-test Dunn's multiple comparisons tests were performed, with $P < 0.05$ considered significant.

RESULTS

Manganese levels were significantly different between the four groups ($P = 0.0005$) and overall higher in non-anaemic than anaemic dogs ($P = 0.0078$). Manganese concentrations were also higher in healthy compared to

ill controls ($P<0.0001$), anaemic dogs with inflammatory bowel disease ($P=0.0056$) and to anaemic dogs with iron-deficiency ($P=0.0011$). No differences were observed between anaemic dogs with inflammatory bowel disease, iron-deficiency anaemia and ill controls.

STATEMENT

This study did not support the hypothesis that iron deficiency anaemia increases whole blood manganese concentrations. Further research is warranted to understand the influence of anaemia on whole blood manganese.

Effect of brachycephalic conformation on haematocrit

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OBJECTIVES

To determine if brachycephalic conformation results in chronic systemic hypoxia leading to appropriate secondary absolute erythrocytosis as a compensatory mechanism.

METHODS

Retrospective study carried out from November 2014 to October 2015. There were 72 brachycephalic dogs (group B). In group B, 6 individuals underwent brachycephalic obstructive airway syndrome (BOAS) surgery. There was a control population (group N) that comprised

44 normocephalic dogs. Information on sex, breed, neuter status, body weight and diagnosis was obtained from medical records. Only individuals between 6 months and 4 years with a haematocrit (hct) performed at the small animal teaching hospital were included in this study. Patients with relative erythrocytosis, a known cause of absolute erythrocytosis such as primary erythrocytosis, cardiorespiratory disease and renal tumours or patients undergoing chemotherapy were excluded from the study.

RESULTS

In group B the overall hct was 46.5% and 46.1% in the group N. Among the group B, multiple regression showed that brachycephalic dogs that underwent BOAS surgery had a significantly higher hct ($p=0.03$) compared to the rest of the dogs. No statistically significant differences were found among the categories of age, sex and neuter status in comparison to the hct. Nonetheless, age had a significant influence in the model.

STATEMENT

This study shows that breeds with extreme brachycephalic features that required BOAS surgery had higher hct values and therefore reference ranges should be review and tailored to these individuals.

Evaluation of a point-of-care coagulation analyser in dogs by comparison with central diagnostic laboratory methods

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OBJECTIVES

To compare measurements of prothrombin time (PT) and activated partial thromboplastin time (aPTT) using a point-of-care coagulation analyser (PCCA) with PT and

kaolin-cephalin clotting time (KCCT) (which is similar to an APTT) measured in a central laboratory.

METHODS

Surplus blood was obtained from 57 dogs that presented for diverse reasons. PT and APTT were measured immediately after sampling on the PCCA using a drop of whole blood. PT and KCCT were measured on a citrated whole blood sample concurrently submitted to the lab. Reproducibility of the PCCA was assessed by running three identical PCCA's simultaneously on 5 different samples.

RESULTS

PT could not be measured in one sample on the PCCA. There were significant correlations between the PT and APTT/KCCT results from the 2 methods. However there was only moderate agreement between the analysers (kappa for PT was 0.57 and for APTT/KCCT was 0.51) in classifying the samples as abnormal or normal using supplied reference ranges.