Oral presentations

Evaluating the renal ultrastructure in cats with diabetes mellitus

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OBJECTIVES

The study objectives were to be the first study to report the ultrastructural changes in the kidneys of diabetic cats compared to control cats and to evaluate whether evidence exists for the development of diabetic nephropathy in cats.

METHODS

Formalin-fixed kidney tissue was collected from three diabetic and five control cats undergoing post-mortem examination. Samples were processed prior to imaging with a transmission electron microscope. Glomerular micrographs were analysed by a blinded investigator

using image analysis software. The following measurements were recorded; glomerular endothelial cell (GEnC) fenestration density and width, podocyte filtration slit density and width, foot process width and glomerular basement membrane (GBM) width and compared between diabetic and control cats using the Mann-Whitney U test.

RESULTS

For diabetic and control cats respectively: GEnC fenestration density was 5.7 (3.8–7.5) and 5.8 (5.0–6.8) μm^{-1} , GEnC fenestration width was 86 (76–143) and 83 (73–97) nm; filtration slit density was 4.4 (3.1–5.9) and 4.4 (3.8–5.6) μm^{-1} , foot process width was 341 (263–532) and 383 (338–484) nm, filtration slit width 38 (31–47) and 34 (29–45) nm, GBM width was 377 (260–475) and 247.9 (127–405) nm. Only GBM width was significantly increased in diabetic compared to control cats ($P = 0.012$).

STATEMENT (CONCLUSIONS)

This is the first study to report the renal ultrastructural changes in cats with diabetes. The GBM width was significantly increased in diabetic cats suggesting evidence for the development of diabetic nephropathy. The study is limited by the small number of cats included and larger studies are warranted.

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The value of serum cortisol as a prognostic indicator in critically ill dogs

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OBJECTIVES

Studies in humans with septic shock have demonstrated an inverse correlation between serum cortisol (SC) concentrations and survival whereas veterinary studies have yielded conflicting results. The aim of this retrospective study was to investigate the prognostic value of SC in a referral-centre intensive care unit (ICU) population as well as the influence of sepsis on this association.

METHODS

Retrospective study of critically ill dogs admitted to the University of Liverpool Small Animal Teaching Hospital ICU between January 2010 and May 2018 that had SC measured within three days of admission. The predictive value of SC was investigated. The current human definition of sepsis was used.

RESULTS

229 patients met the inclusion criteria and the mortality rate was 20%. SC concentrations were significantly higher in non-survivors (234 nmol/L) than survivors (123 nmol/L) ($P < .001$). SC demonstrated good predictive value for non-survival with an area under the curve of 0.72 (CI 0.64–0.80). An optimum cut-off of 210 nmol/L was calculated corresponding to an OR of 5.4 (CI 2.7–10.9) for non-survival with a sensitivity and specificity of 58% and 80% respectively. SC levels were higher in septic patients (253 nmol/L) than non-septic patients (124 nmol/L) ($P < .001$) but was not predictive of survival ($P = 0.15$).

STATEMENT (CONCLUSIONS)

Serum cortisol may be used as part of the overall assessment of a critically-ill dog's prognosis.

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