Response to furosemide in anuric and oliguric acute kidney injury is not associated with survival in dogs and cats

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OBJECTIVES

To evaluate the association between response to furosemide administration and survival in cats and dogs with acute kidney injury (AKI).

METHODS

Cats and dogs with a clinical diagnosis of anuric (0ml/kg/hr) or oliguric (<1ml/kg/hr) AKI hospitalised at a university teaching hospital and treated with intravenous furosemide between May 2011 and September 2016 were retrospectively identified and included in the study. A positive response to furosemide was defined as conversion from anuric or oliguric status to normal urine production (>1ml/kg/hr) or a doubling of urine output. An association between the following categorical variables was evaluated using Fishers exact test: - response to furosemide and survival to discharge.

RESULTS

Four cats and eight dogs were included in the study. Five animals (42%), of which three were cats, were anuric at presentation. Seven animals (58%), of which one was a cat, were oliguric at presentation. Furosemide was administered at a median (range) dose of 2 (1–4) mg/kg. Five animals (42%), of which two were cats, responded to furosemide. Of the animals that responded to furosemide four were oliguric and one was anuric at presentation. One dog and one cat survived to discharge. There was no significant association between response to furosemide and survival ($P=0.152$).

STATEMENT

Furosemide is commonly used in management of oliguric and anuric AKI in cats and dogs. In this study, response to furosemide administration was not associated with survival to discharge, however, the small number of animals included, limited the study.

Evaluation of urinary biomarkers to investigate contrast induced nephropathy in dogs with normal renal function undergoing computed tomography (CT) angiography

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OBJECTIVES

To investigate renal injury following administration of an intravenous non-ionic contrast agent in dogs with normal renal function undergoing computed tomography (CT) using a panel of urinary biomarkers (neutrophil gelatinase associated ligand; NGAL, kidney injury marker-1; KIM-1, clusterin, cystatin C, osteopontin, monocyte chemoattractant protein-1; MCP-1).

METHODS

Dogs presenting to a university teaching hospital and undergoing CT for diagnostic purposes were prospectively enrolled between August and December 2015. Dogs with urinary tract disease or renal dysfunction were excluded. Free catch urine samples were collected at admission, 6–12hrs and 12–24hrs post-CT. Urinary biomarkers were analysed using a commercially available canine specific assay. Results were normalised to urinary creatinine. Change in biomarkers over time was evaluated using Friedman's ANOVA and post-hoc testing was performed using the Wilcoxon signed rank test with a Bonferroni correction.

RESULTS

Thirty dogs were included in the study of which 25 received contrast agent. In the dogs administered contrast, the following biomarkers significantly changed

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over time: – clusterin ($P=0.031$), osteopontin ($P=0.023$) and KIM-1 ($P=0.003$). Clusterin and osteopontin significantly increased at 6–12hrs post-contrast administration and returned to baseline by 12–24hrs and KIM-1 significantly decreased over time.

STATEMENT

The study identified transient changes in some urinary biomarkers following administration of intravenous

contrast agent to dogs. The clinical significance is unclear given the lack of consistency of direction of change between biomarkers but is not strongly supportive of any nephrotoxic effect.

FUNDING/DECLARATIONS OF INTEREST

Sample analysis and data visualisation was performed by Zoetis Animal Health, New Jersey, USA

Early detection of kidney disease in dogs: a comparison of serum SDMA and creatinine versus GFR measured by Iohexol clearance

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OBJECTIVES

This study evaluates symmetrical dimethylarginine (SDMA), as an alternative marker of reduced GFR, compared to serum creatinine (sCr), in a clinically representative population of dogs with suspected chronic kidney disease (CKD).

METHODS

This prospective study included 62 dogs suspected of having CKD based on clinical findings but with sCr within the laboratory reference range. Each dog had sCr, SDMA and GFR (iohexol clearance) measured concomitantly.

The dogs were stratified in four weight quartiles (Bexfield et al. 2008) and the individual relative GFR deviation compared to the average GFR of the relevant weight quartile (%GFR) was calculated. Correlation between sCr or SDMA and %GFR were evaluated and the coefficient of determination (R^2) calculated.

RESULTS

Forty-three dogs had a GFR below the mean of their weight quartile. Nine were >40%, 8 were 30–40%, 7 were 20–30%, 19 were <20% below mean GFR. sCr and SDMA were inversely correlated with %GFR: the relationship was stronger for creatinine ($R^2=0.51$) than SDMA ($R^2=0.38$). SDMA and sCr were elevated in 6/19 (32%) and 0/19 dogs with normal/increased GFR respectively. SDMA and sCr performances are summarised below:

	SDMA >14 µg/dL	sCr >125 µmol/L
Sensitivity	72.0%	25.6%
Specificity	68.4%	100%
Positive predictive value	83.7%	100%
Negative predictive value	52.0%	37.2%

STATEMENT

SDMA was more sensitive than creatinine for detection of early decreases in GFR but generated falsely positive results in 32% of the cases. Longitudinal studies are warranted to determine the predictive value of reduced GFR patients in determining the occurrence of clinical CKD and survival in these patients.

Breed, age and gender distribution of feline hepatobiliary disease in the United Kingdom

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OBJECTIVES

Feline hepatobiliary disease is common, however no data exists to determine which diseases occur in the UK, nor if there are breed, age and gender associations. The first objective is therefore to determine the relative frequency of different feline hepatobiliary diseases in the UK. A second objective is to identify which breeds have an