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Chronic kidney disease

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Abstract

3 dogs and a cat were brought to the clinic with history of polyuria and polydipsia, weight loss, vomiting, lethargy, hyporexia/anorexia, small, lumpy, bumpy kidneys. The temperature was slightly elevated (39.6 °C) and mucous membrane was pale. The dogs were sent for haematological examination, liver function test and kidney function test. The cat was sent for kidney function test. They were diagnosed with chronic kidney disease. Appetite stimulants (Oral maropitant at 4mg daily) along with mirtazapine (Mirtazapine 2mg tablets immunosuppressive (dexamethasone initially (0.5mg/kg IVq24h for 7 days [Rapidexon 2mg/ml injectable solution; Eurovet]), followed by prednisolone (1.8mg/kg POq24h [Prednicare 5mg tablets; Animalcare]). The treatment was given for 20 days and improvement was seen.

Keywords: chronic kidney disease, appetite stimulant, immunosuppressive

Introduction

Chronic kidney disease mainly occurs in older dogs and cats and one of the most common renal disease in elderly patients. It is the structural or functional or structural impairment of kidneys and can occur for more than 3 months (Bartges, 2012) [1]. Vomiting and inappetance are the clinical signs associated with chronic stages of renal disease (Elliot, 2019) [3]. Poor appetite is one of the main factors owners perceive as reducing the quality of life of these cats (Reynolds *et al.*, 2010; Bijsmans *et al.*, 2015) [4, 5]. Renal disease is mainly diagnosed on elevation of serum creatinine concentration. Creatinine concentration can be affected by various factors like age, sex, muscle mass, and hydration status (Dahlem *et al.*, 2017) [2]

History

3 dogs and a cat were brought to the clinic with history of polyuria and polydipsia, weight loss, vomiting, lethargy, hyporexia/anorexia, small, lumpy, bumpy kidneys. The temperature was slightly elevated (39.6 °C) and mucous membrane was pale.

Table 1: Details of cases brought to clinics

Case	Species	Breed	Sex	Age
Case 1	Canine	Dalmatian	Male	9 year
Case 2	Canine	Spitz	Male	12 year
Case 3	Canine	Labrador	Male	4 year
Case 4	feline	Not specified	male	3 year

Reports

Table 2: Haematological profile of the cases

Parameter	Normal value	Case 1	Case2	Case 3
Haemoglobin (g/dl)	12-18	Normal (13.6)	Normal (14.7)	Anemia (10.3)
TLC (thou/mm ³)	6-17	Leucocytosis (29.2)	Leucocytosis (24)	Leucocytosis (30)
DLC-Neutrophils (%)	60-76	Neutrophilia (80)	Neutrophilia (84)	Neutrophilia (89)
DLC-Lymphocytes (%)	12-30	Normal (15)	Lymphopenia (10)	Lymphopenia (8)
DLC-Eosinophils (%)	2-10	Normal(2)	Normal (3)	(1)
DLC-Monocyte (%)	3-10	NORMAL (3)	NORMAL (3)	(2)
DLC-Basophils (%)	0-1	NORMAL (0)	NORMAL (0)	NORMAL (0)
RBC (mill/mm ³)	5.5-8.5	Polycythemia (8.80)	Normal (6.87)	Normal (5.51)
PCV (%)	37-55	Normal (42.6)	Normal (42.4)	Anemia (34.4)
MCV (fL)	60-77	Microcytic (48.5)	Normocytic (61.6)	Normocytic (62.5)
MCH (pg)	19.5-24.5	Hypochromic (15.4)	Normal (21.4)	Hypochromic (18.6)
Platelet count (thou/mm ³)	211-621	Thrombocytopenia (180)	Thrombocytopenia (160)	Thrombocytopenia (110)
RDW-CV	0.115-0.159	Normal (0.151)	Normal (0.132)	Anisocytosis (0.175)

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Biochemical Report

Table 3: Liver function test of the cases

Parameter	Normal value	Case 1	Case 2	Case 3
Liver function test				
Bilirubin -total (mg/dl)	0-0.4	0.20	0.14	1.07
Bilirubin -direct (mg/dl)	0-0.1	0.08	0.05	0.56
Bilirubin -indirect (mg/dl)	0-0.3	0.12	0.09	0.51
SGOT (AST) (U/L)	9-49	36.3	63.6	72.3
SGPT (ALT) (U/L)	8-57	18.0	77.3	42.2
Alkaline phosphatase (U/L)	10-100	187.3	306.5	128.5
Total protein (g/dl)	5.5-7.5	8.3	6.7	3.7
Albumin (g/dl)	2.6-4	2.4	2.9	1.7
Globulin (g/dl)	2.1-3.7	5.9	3.8	2.0
A/G ratio	0.5-2.2	0.4:1	0.7	0.8:1

Table 4: Kidney function test of the cases

Parameter	Normal value	Case 1	Case 2	Case 3	Case 4
Kidney function test					
Blood Urea (mg/dl)	18.8-55.4	143.6	217.0	138.6	282.6
Creatinine (mg/dl)	0.5-1.6	3.4	6.9	5.6	6.9
Uric Acid (mg/dl)	0-2	0.4	0.1	0.7	0.1
Calcium (mg/dl)	8.7-11.8	8.3	12.5	8.7	10.3
Phosphorus (mg/dl)	3-6.2	7.0	7.1	7.3	9.3
Na+ (mEq/l)	140.3-153.9	138	137	138.1	150.0
K+ (mEq/l)	3.8-5.6	5.8	5.8	5.8	4.4
Cl- (mEq/l)	102-117	105	104	102	114

Treatment and discussion



Fig 1: Subcutaneous fluid administered to cat with chronic renal disease

Supportive care: Appetite stimulants (Oral maropitant at 4mg daily (Cerenia 16mg tablets; Zoetis) along with mirtazapine (Mirtazapine 2mg tablets; reconditioned tablets) at 2mg every other day), immunosuppressive (dexamethasone initially (0.5mg/kg IVq24h for 7 days [Rapidexon 2mg/ml injectable solution; Eurovet]), followed by prednisolone (1.8mg/kg PO q24h [Prednicare 5mg tablets; Animalcare]). The treatment was given for 20 days and improvement was seen.

Nutrition: Renal prescription diets.

In conclusion, inappetence, vomiting and weight loss are common in later stages of CKD and negatively impact quality of life of dogs and cats. Creatinine concentrations were higher in all the cases reported and it is inversely proportional to Glomerular filtration rate (GFR).

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