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Short Communication

Clinical Signs Observed in Different Stages of Chronic Kidney Disease in Dogs

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Abstract

Chronic kidney disease is of multifactorial origin and is not a single disease condition. CKD produces various nonspecific clinical signs, which depends on degree of uremic crisis. In the following article various clinical signs observed in different stages of CKD were discussed.

Keywords: CKD, Dogs, Signs, Stages

Introduction

CKD is irreversible and progressive deterioration of renal function, resulting from a decreased number of functional nephrons (Foster, 2013). In CKD, animal fails to excrete many naturally occurring waste products such as blood urea nitrogen (BUN), creatinine and phosphorus, leading to accumulation of these substances in the body. An excessive accumulation of these substances leads to azotemia, resulting in halitosis, weight loss, polyuria/polydipsia, urinary incontinence, vomiting, decreased appetite, lethargy and diarrhea. Clinical signs associated with CKD are not pathognomonic and sometime do not appear until substantial renal damage develops (Lena. 2018). At least loss of 70-85 per cent of functional renal capacity is necessary for a pet to show signs of renal failure (Squires, 1996). The present study was undertaken to record various clinical signs exhibited in all four stages of CKD.

Material and Methods

Total of 176 dogs with chronic kidney disease were staged as per guidelines of IRIS Board as Stage I, Stage II, Stage III and Stage IV. The IRIS stage of CKD was determined based on serum creatinine concentration (Polzin, 2013). The various clinical signs exhibited by CKD dogs were recorded and presented in percentages.

Result and Discussion

The percentage of dogs exhibiting different clinical signs at presentation was given in the Table 1. Most prominent clinical signs observed in dogs with CKD were anorexia, dull and depression, vomiting, melena, emaciation, halitosis, stomatitis, pale mucus membrane, dehydration, polyuria and polydipsia, dyspnea, nervous signs, abdominal pain, recumbency and ascites. These findings were in accordance with earlier works of Kavitha *et al.* (2008), Polzin (2011), Oburai *et al.* (2015), Ajay and Raj (2018) and Nakang *et al*. (2019).

Table 1: Clinical Signs observed in different stages of Chronic Kidney Disease in dogs

Clinical Signs	Overall (%)	CKD I (%)	CKD II (%)	CKD III (%)	CKD IV (%)
	N=176	N=32	N = 43	N=44	N=57
Abdominal Pain	14.2	-	2.33	20.45	26.32
Anorexia	69.32	37.5	41.86	81.82	98.25
Ascites	3.41	-	2.33	6.82	3.51
Dehydration	36.36	6.25	6.98	40.91	71.93
Dull and Depression	56.25	12.5	32.56	81.82	78.95
Dyspnea	21.59	-	2.33	29.55	42.11
Emaciation/Weight Loss	47.73	6.25	9.3	70.45	82.46
Halitosis	46.59	9.38	9.3	61.36	84.21
Melena & Diarrhea	48.86	3.13	11.63	63.64	91.23
Nervous signs	17.61	-	-	11.36	45.61
Pale Mucus Membrane	39.77	9.38	9.3	47.72	73.68
Polyuria and Polydipsia	31.25	28.13	39.53	31.82	26.32
Recumbency	12.5	-	-	18.18	24.56
Stomatitis/Oral Ulcers	40.34	6.25	9.3	40.91	82.46
Vomiting	56.25	6.25	18.6	86.36	89.47

Anorexia was prominent feature in 69.32 per cent of CKD dogs of all stages. Anorexia in CKD might be due to accumulation of toxic metabolic waste products or may due to decreased clearance of certain hormones like leptin, ghrelin which regulate hunger center in the brain. Apart from this metabolic acidosis, anemia, dehydration and hypokalemia can also contribute to anorexia during uremic crisis (Quéau, 2012). Vomiting in CKD results from results decreased clearance of gastrin and increased gastric acid production in the stomach, which worsens the gastric lesions as indicated by Osborne *et al*. (1995). Possible reason for melena in CKD is due to upper gastrointestinal bleeding, which occurs because gastric ulceration in response to hypergastrinemia (Osborne *et al.*

1995). In chronic kidney disease polyuria will be primary and polydipsia will be secondary, polyuria will arises because of the inability of kidney to conserve water by concentrating urine in CKD (Polzin, 2010). Ascites in CKD is may be due to diminished production of albumin, increased excretion of proteins through urine or sodium retention by diseased kidney. Stomatitis in CKD is due to conversion of accumulating urea into ammonia by urease producing bacteria present in the oral cavity.

Figure 1: Pale conjuctival mucucs membrane in dog suffering with CKD

Anorexia, polyuria and polydipsia were prominent in Stage I and Stage II of CKD, whereas in stage III and IV vomiting, melena, anorexia were more prominent. In stage IV reduced percentage of polyuria was observed. These observations were in accordance with Kavitha *et al.* (2008). Polyuria and polydipsia has been reported as first clinical sign of CRF (Haller, 2002). This variation of clinical signs in different stages of CKD is mainly depends on degree of uremic crisis, as uremic crisis develops gastrointestinal manifestations becomes more notable than others.

Figure 2: Dark brown stool from dog suffering with CKD

Conclusion

In CKD clinical signs are nonspecific but signs vary depending on uremic crisis and stage of CKD.

Conflict of Interests

There is no conflict of interest.

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