

## Incidence of renal disorders in dogs

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### Abstract

The present study was carried out from October 2018 to March 2020 on a total of 2063 dogs presented to the Department of Veterinary Medicine, DGCN COVAS, CSKHPKV, Palampur (H.P.). Animals were suspected for renal failure on the basis of history and presenting clinical signs. Haematological examination, biochemical analysis, urine examination, radiographic and ultrasonographic studies were performed for the confirmatory diagnosis. Overall, 100 cases suffering from renal failure were included in the study representing an incidence of 4.84 %. The age wise incidence of renal failure was highest in >8 years (33 %) followed by 2-5 years (32 %) and 5-8 years (23 %). The sex wise incidence of renal failure was higher in males (70 %) than females (30 %). Breed wise incidence of renal failure was highest in Labrador Retrievers (27%).

**Key Words:** Renal failure, Incidence, Labrador Retrievers

Renal failure is the most common and fatal condition occurring in dogs and is third leading cause of death (Lund *et al.*, 1999). Renal failure can be classified as acute renal failure and chronic renal failure. Acute Renal Failure (ARF) is characterized by rapid onset of renal insufficiency, reduction in glomerular filtration rate and renal plasma flow and the clinical and biochemical aftermath of excretory failure. The etiological causes of acute renal failure can be infectious, toxic, hemodynamic/metabolic such as shock, pancreatitis, congestive heart failure and inflammatory i.e. glomerulonephritis and immune mediated. Consistent signs of Acute Renal failure are depression, listlessness, vomiting, anorexia and diarrhoea. It is a reversible state but should be diagnosed quickly and treated aggressively. Irreversible damage to renal parenchyma may occur if these cases are not treated well in time (Cowgill 2003).

Chronic Renal Failure (CRF) is a condition characterized by inability of the kidneys to perform excretion, regulate electrolyte and water balance, perform biosynthetic endocrine function and perform metabolic functions due to loss of nephrons over a period of time. Loss of function results in abnormal filtration and retention of toxic wastes, failure of erythropoietin production and derangement of electrolyte, fluid and acid base balance. Diagnosis of Chronic Renal Failure includes history such as changes in urine volume and physical examination, renal function tests, serum acid-base and electrolytes status, urinalysis and imaging studies. Kidney disease can also be recognized by estimating markers of kidney

disease. Dietary modification such as renal diet helps in delaying onset of uremia, improve nutrition and quality of life (Polzin 2011).

Over the past few years, many diagnostic and therapeutic interventions have been advocated for renal failure in dogs but the effectiveness of techniques is highly questionable. Early diagnosis of potential cause and effective therapeutic intervention helps in alleviating the signs of infection and increasing chances of recovery. Many cases of renal failure were being presented in the Department of Veterinary Medicine, DGCN COVAS, CSKHPKV, Palampur (H.P.), therefore, keeping these in view, the current study was carried out to find incidence of renal failure in dogs.

### Materials and Methods

The present study was carried out from October 2018 to March 2020 on a total of 2063 dogs presented in the Department of Veterinary Medicine, College of Veterinary and Animal Sciences, CSKHPKV Palampur (H.P.). Preliminary screening of animals was based on history, clinical manifestations and urinalysis. Haemato-biochemical studies, culture of urine and diagnostic studies (radiography and ultrasonography) were employed for confirmatory diagnosis of renal failure. The incidence of renal failure was recorded in relation with age, sex and breed.

### Results and Discussion

In acute renal failure, incidence was higher in 2-5 years age group (35%, 7/20) followed by >8 years (25%, 5/20), 5-8 years of age (20%, 4/20) and was lowest in

**Table 1: Age wise incidence of Renal Failure in dogs**

S.No.	Age of dogs	Renal Failure		
		ARF	CRF	Total
1	2 months – 1 year	03(15%)	03(3.75%)	06(6%)
2	1 – 2 years	01(5%)	05(6.25%)	06(6%)
3	2 – 5 years	07(35%)	25(31.25%)	32(32%)
4	5 – 8 years	04(20%)	19(23.75%)	23(23%)
5	>8 years	05(25%)	28(35%)	33(33%)
	Total	20	80	100

**Table 2: Sex wise incidence of Renal Failure in dogs**

S.No.	Sex	Renal Failure		
		ARF	CRF	Total
1	Males	13(65%)	57(71.25%)	70(70%)
2	Females	7(25%)	23(28.75%)	30(30%)

**Table 3: Breed wise incidence of Renal Failure in dogs**

S. No.	Breed	Renal Failure		
		ARF	CRF	Total
1	Labrador Retriever	4(20)	23(28.75)	27(27)
2	Pomeranian	1(5)	18(22.5)	19(19)
3	Non-descript	5(25)	11(13.75)	16(16)
4	German Shepherd	4(20)	10(12.5)	14(14)
5	Pug	-	6(7.5)	6(6)
6	Gaddi	1(5)	2(2.5)	3(3)
7	Golden Retriever	-	1(1.25)	1(1)
8	Rottweiler	-	4(5)	4(4)
9	Cocker Spaniel	-	1(1.25)	1(1)
10	Pitbull	1(5)	-	1(1)
11	Pointer	1(5)	-	1(1)
12	Pomeranian cross	-	2(2.5)	2(2)
13	Beagle	-	-	-
14	Crossbred	-	1(1.25)	1(1)
15	Daschund	1(5)	-	1(1)
16	French Mastiff	1(5)	-	1(1)
17	Pakistani Bully	-	1(1.25)	1(1)
18	St. Bernard	-	-	-
19	Boxer	1(5)	-	1(1)
	<b>Total</b>	20	80	100

younger dogs of 1-2 years of age (5%, 1/20). In chronic renal failure, incidence was highest in dogs >8 years of age (35%, 28/80) followed by 2-5 years of age (31.25%, 25/80), 5-8 years of age (23.75%, 19/80) and was lowest

in 2 months-1 year of age (3.75%, 3/80) (Table 1).

The overall incidence of renal failure was highest in >8 years (33%) followed by 2-5 years (32%) and 5-8 years (23%). These findings were in agreement

with Kandula and Karlapudi (2014), Tufani *et al.* (2015), Oburai *et al.* (2015), Mshelbwala *et al.* (2016), Katoch *et al.* (2017), Bouillon *et al.* (2018) and Thade *et al.* (2019). This could be attributed to the fact that with increasing age, there is decrease in blood flow to the kidneys along with loss of nephrons. The resorption process in the residual nephrons also decreases with the increasing age of animal (Grauer and Lane, 1995).

The incidence of acute renal failure was higher in males (65%, 13/20) than females (35%, 7/20). Similarly, males were more affected than females in chronic renal failure (71.25%). The overall incidence of renal failure was highest in males (70%) and lowest in females (30%) (Table 2). The above finding was in accordance with Tufani *et al.* (2015), Oburai *et al.* (2015), Katoch *et al.* (2017) and Thade *et al.* (2019). Higher prevalence in males may be due to anatomical differences in male and female kidneys in terms of size and volume and urinary tract which play an important role in disease progression. Also, the preference of dog owners towards male dogs as pets could also be a reason for higher prevalence in males. These findings were in contrary to Kandula and Karlapudi (2014), Bouillon *et al.* (2018) and Nabi *et al.* (2018) who reported higher prevalence in females than males.

In acute renal failure, incidence was highest in Non-descript (25%) dogs followed by Labrador Retriever and German Shepherd (20% each) whereas in chronic renal failure, Labrador Retriever (28.75%) was most affected breed followed by Pomeranian (22.5%) and Non-descript dogs (13.75%) (Table 3). The overall incidence of renal failure with respect to breed was highest reported in Labrador Retriever (27%) (Table 3). This finding was in agreement with Eubig *et al.* (2005), Kandula and Karlapudi (2014), Tufani *et al.* (2015), Katoch *et al.* (2017), Bouillon *et al.* (2018) and Nabi *et al.* (2018). Breed wise variation of renal disorders may be due to prevalence of particular breed in a particular geographical area. Labradors are also more susceptible to leptospirosis, pyometra and other mixed conditions which could also be the reason for higher prevalence of this breed.

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