

## **POLYCYSTIC KIDNEY DISEASE IN A PERSIAN CAT**

**Neetu Saini<sup>\*</sup>, Sujata Turkar and Praveen V. Mathapati**

Department of Veterinary Medicine

College of Veterinary Sciences, Guru Angad Dev Veterinary and Animal Sciences

University, Ludhiana-141004, Punjab

E-mail: sainin26@gmail.com (\**Corresponding Author*)

**Abstract:** Polycystic kidney disease (PKD) is a familial disease in Persian cats. The PKD leads to chronic renal failure in middle to old age cats. In present case, the PKD was diagnosed in 6 year old male Persian cat using ultrasonography. There was slight enlargement of both kidneys with multiple spherical, anechoic or hypoechoic cavities in both kidneys suggestive of polycystic kidney disease. The cat was successfully treated within one week and was kept on renal diet to slow down the progression of the disease and help to maintain quality life.

**Keywords:** Polycystic kidney disease, Persian cat.

### **Introduction**

Polycystic kidney disease (PKD) is an inherited autosomal dominant disease commonly seen in Persian cats [1,2,3]. PKD is one of the most frequent causes of death in Persian cats. The adult onset polycystic kidney disease (PKD) in Persian and Persian cross cats has been found in veterinary literature [4]. The disease is characterized by small number of cysts of variable sizes in the renal cortex and medulla and occasionally in the liver and pancreas [5]. Ultrasonography has been found to be most definite method for diagnosis of PKD in cats [6]. Affected cats remain clinically normal for most of the life time and renal failure occurs later in life i.e. >7 years of age [7].

### **Case history and clinical observations:**

A 6 year old male, Persian cat weighing 5 kg was presented to Small Animal Clinics of Teaching Veterinary Clinical Complex, GADVASU, Ludhiana, with the complaint of vomiting, anorexia and urinary incontinence for one week. The animal was treated by local veterinarian but clinical signs did not resolve. On clinical examination, the cat appeared dull and depressed with high fever (105°F), congested mucous membrane, normal heart rate (126 beats per minute) and rough matted hair coat. On palpation, the abdomen was tense and revealed distension of urinary bladder. The mean values of three consecutive systolic/diastolic blood pressure measurements estimated by Doppler method (Vet-dop2,

Model BF2, Vmed technology, USA) was 137/81mm Hg. Hematology showed leukocytosis (23,700/ cu mm), neutrophilia (84%) and mild anemia (Hb-9.4 g/dl). Biochemistry revealed increased serum phosphorus (7.3 mg/dl, reference range 3-6.1 mg/dl), ALT (121U/L, reference range 25-97U/L) and calcium (14 mg/dL, reference range 8.7-11.7 mg/dl). However, blood urea nitrogen, creatinine, glucose and potassium were almost in normal range. Abdominal radiography showed distended urinary bladder pushing the intestines cranially and dorsally. Ultrasonography of abdomen showed markedly enlarged urinary bladder. Renal ultrasonography revealed slight enlargement of both kidneys (Right kidney= 4.22 cm x 2.60 and left kidney 4.61 cm x 2.79 cm) (Fig. 1 & 2) with multiple spherical, anechoic or hypoechoic cavities in both kidneys, measuring from 0.66 cm to 1.50 cm suggestive of polycystic kidney disease (Fig. 3).

### **Results and discussion**

The cat was treated with Ringers Lactate 100 ml slow i.v., Furosemide (Lasix, Sanofi Aventis) @ 2 mg/kg i.m. bid followed by tablet @ 2 mg/kg PO bid for a week, Ampicillin (Roskillin, Pfizer) @ 22 mg/kg i.m. bid, Metoclopramide (Perinorm, IPCA) @ 1 mg/kg i.m., bid, Ranitidine (Aciloc, Cadila) @ 1 mg/kg i.m. bid followed by syrup Rantac 1 ml PO for 5 days and Syrup Polybion ½ tsp. PO OD for 15 days. The animal was catheterized to relieve urinary bladder pressure. Post-treatment, the cat was kept on the renal diet (Royal Canin Renal Feline) to slow down the progression of disease and to maintain quality of life. The cat showed significant clinical improvement and started taking food and water normally within 1 week.

Feline PKD is a significant health problem for Persian cats and was first described as a familial disease in cats [8]. Feline PKD has been reported in the literature primarily affecting Persian, Persian cross and long-haired cats [3]. In present case, the multiple cysts were found in both the kidneys but not in the liver and spleen. Kidneys were slightly enlarged (right 4.22 cm length and left 4.61 cm length), normal size of the kidneys in cat is 3-4.3 cm [9]. Cysts were identified as spherical, anechoic structures with strong distal acoustic enhancement within the renal cortex or medulla of affected kidneys [10]. Distortion of parenchyma [11] and alterations in renal structure can occur with severe disease and multiple cysts. This could be the cause of chronic renal failure in older cats with renal cysts [12]. Blood urea nitrogen and creatinine were in normal range in the present case which may be due to the fact that cat in the present case was not too old [10]. Kidneys are the primary route of phosphorus excretion. Retention of phosphorus is due to reduction in kidney function. Hypertension is present in

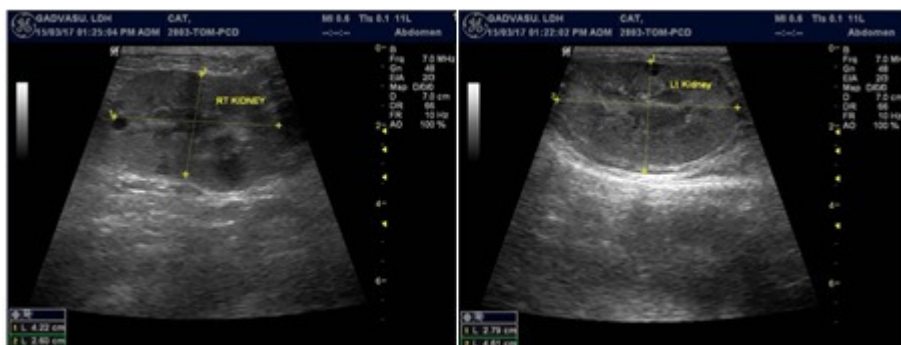
most of the human patients with PKD. But in cats, hypertension may not develop in most of the cats with PKD and only a few case shows mild hypertension [13]. Similarly in present case, the average of three blood pressure measurements were within normal reference range. The clinical signs of anorexia, vomiting and polyuria are present in the cats when almost more than 70% of kidneys are nonfunctional. So diagnosis should be done as early as possible especially in cat breeds which are predisposed to PKD [14]. Breeding can be prevented in the cats with PKD so that the disease transmission to the offspring's can be prevented. PKD may be detected on physical examination as renomegaly. Differential diagnoses for this clinical finding in the cat include PKD, lymphoma, hydronephrosis, perinephric or capsular fluid accumulation and granulomatous infectious peritonitis [15]. Different methods may be used for diagnosis of PKD but the most confirmative method is ultrasonography [6]. It was reported that the sensitivity of ultrasonographic examination was 91% and accuracy rate was 100% in older than 16 weeks Persian cats [16].

So, it is always necessary to perform haemato-biochemical profile and abdominal ultrasonographic examination for kidneys routinely in Persian breed cats and Persian related breeds and only PKD negative cats should be used for breeding purpose.

### References

- [1] Lulich, J.P., Osborne, C.A., Walter, P.A. and O'Brien, T.D. (1988). Feline idiopathic polycystic kidney disease. *Compend Cont Ed Pract Vet.* 10:1029-1041.
- [2] Stebbins, K.E. (1989). Polycystic disease of the kidney and liver in an adult Persian cat. *J Comp Pathol.* 100:327- 330.
- [3] Eaton, K.A., Biller, D.S., DiBartola, S.P., Radin, M.J. and Wellman, M.L. (1997). Autosomal dominant polycystic kidney disease in Persian- and Persian cross cats. *Vet Pathol.* 34: 117-26.
- [4] Battershell, D and Gracia, G.P. (1969). Polycystic kidney in cat. *J. Am Vet Med Assoc.* 154:665-666.
- [5] De Cock, H.E.V., Forman, M.A., Farver, T.B. and Marks, S.L. (2007). Prevalence and histopathologic characteristics of pancreatitis in cats. *Vet Pathol.*44: 39-49.
- [6] Beck, C. and Lavelle, R.B. (2001). Feline polycystic kidney disease in cats; A prospective study using ultrasonography. *Aust. Vet. J.* 79(3):181-4.
- [7] Karabagli, M. and Alev, A.K. (2009). A case of polycystic kidney disease in a Persian cat. *J. Fac. Vety. Med. Istanbul. Univ.*35 (2): 51-56.

- [8] Crowell, W.A., Hubbell, J.J. and Riley, J.C. (1979). Polycystic renal disease in related cats. *J Am Vet Med Assoc.* 175:286-288.
- [9] Ettinger S.C., Feldman, E.C. (2000). In *Textbook of Internal Veterinary Medicine 5 th Edition.*, W B Saunders Company, Philadelphia.
- [10] Vucicevic, M., Slijepcevic, D., Davitkov, D., Avdalovic, V., Aleksic-Kovacevic, S., Stevanovic, J. and Stanimirovic, Z. (2016). First report of Polycystic kidney disease occurrence in Persian cats in Serbi. *Veterinaria Italiana* 52 (1): 51-56.
- [11] Grooters, A.M., Cuypers, M.D., Partington, B.P., Williams, J. and Pechman, R.D. (1997). Renomegaly in dogs and cats, part II diagnostic approach. *Compend Contin. Educ. Pract Vet.* 19:1213-1229.
- [12] Lulich, J.P., Osborne, C.A., Walter, P.A. and O'Brien, T.D. (1988). Feline idiopathic polycystic kidney disease. *Compendium on continuing education for the practicing veterinarian.* 10(9):1030-40.
- [13] Pedersen, K.M., Pedersen, H.D., Haggstrom, J., Koch, J. and Ersboll, A.K. (2003). Increased mean arterial pressure and aldosterone-to-renin ratio in Persian cats with polycystic kidney disease. *J Vet Intern Med.* 17(1):21-27.
- [14] Lyons, A.L. (2010). Feline genetics: clinical applications and genetic testing. *Top Companion Anim M.*25: 203-212.
- [15] O'Leary, C.A., Mackay, B.M., Malik, R., Edmondston, J.E., Robinson, W.F. and Huxtable, C.R. (1999). Polycystic kidney disease in Bull Terriers: an autosomal dominant inherited disorder. *Aust Vet J.* 77:361- 366.
- [16] Biller, D.S., Chew, D.J. and DiBortola, S.P.(1990). Polycystic kidney disease in a family of Persian cats. *J Am Vet Med Assoc* 196: 1288-1290.



**Fig 1.** Ultrasonographic measurements of Right kidney

**Fig 2.** Ultrasonographic measurements of Left kidney



**Fig 3.** Ultrasound of kidney showing multiple cysts