

# Polycystic kidneys disease in a Himalayan-Persian crossbreed cat<sup>†</sup>

Putri Nugraha<sup>1</sup>, Convienna<sup>1</sup>, Andreas Topan Dewa<sup>1</sup>, I Putu Cahyadi Putra<sup>2</sup>, Ni Wayan Helpina Widyasanti<sup>3,\*</sup>

<sup>1</sup> Kassiti Vetcare Clinic, Bandung, West Java, Indonesia

<sup>2</sup> Laboratory of Veterinary Parasitology, Faculty of Veterinary Medicine, Udayana University, Bali, Indonesia

<sup>3</sup> Laboratory of Veterinary Anatomy and Embryology, Faculty of Veterinary Medicine, Udayana University, Bali, Indonesia

**ABSTRACT:** Polycystic Kidney Disease (PKD) is a genetic disorder caused by mutations in PKD1, predominantly found in Persian cats. This case study reports the incidence of PKD in a Himalayan-Persian crossbreed cat treated with fluid therapy, renal supplementation, nutritional management, and red mold rice. A 5-year-old spayed female Himalayan-Persian breed cat was brought to the Kassiti Vetcare Veterinary Clinic, Bandung, complaining of decreased appetite for a week, unwilling-ness to eat for four days, abdominal pain, and orange urine. Hyperchromic macrocytic anemia was observed in a complete blood test. Blood chemistry examination revealed increased creatinine levels (363.1  $\mu\text{mol/L}$ ), indicating impaired renal function. Ultra-sound examination showed that the kidneys were enlarged, the border between the cortex and medulla was unclear, and hypo-to-anechoic cysts of various sizes were observed in the renal cortex-medulla area. The patient was diagnosed with PKD and had poor prognosis. Treatment included intravenous (IV) Ringer's lactate fluid therapy, RenaCor® renal supplement, Flozindo® red mold rice (RMR), and NatureBridge® for cat kidney. The patient's condition improved after treatment, as indicated by her active condition and normal urine color.

## Keywords:

kidney cysts, Himalayan-Persian crossbreed cat, PKD1 gene, treatment

## INTRODUCTION

Polycystic Kidney Disease (PKD) is a genetic disorder that is predominantly found in Persian cats and related breeds (Bilgen *et al.* 2020). PKD results from a mutation in PKD1 and is characterized by multiple cysts in the kidney. Cysts develop over time and damage the kidney tis-sue, resulting in chronic kidney failure and death (Sim Lam *et al.* 2020). Case reports of PKD in Himalayan Persian cats are rarely documented in Indonesia; therefore, it is necessary to discuss this. This case report discusses the incidence of PKD in a Himalayan-Persian crossbreed cat using fluid therapy, renal supplements, nutrition, and red mold rice (RMR).

## CASE

**Anamnesis and Signalment:** A 5-year-old spayed female Himalayan-Persian cat was brought to the Kassiti Vetcare Clinic in Bandung, West Java. The cat had a decreased appetite for a week and did not eat for four days before being brought to the veterinary clinic. The cat presented with abdominal pain and orange urine color. **Physical Examination:** Body weight, 4 kg; body temperature, 38.1 °C; body condition score (BCS), 4 (scale 1-9), heart rate, 120 bpm; respiration rate, 30 bpm; pink oral mucosa; capillary refill time (CRT) >2 seconds; and skin turgor <3 seconds. The level of consciousness was alert and responsive (QAS). The cat showed discomfort when palpated in the abdominal

region and had a palpable enlargement of the kidneys.

**Laboratory Examinations:** complete blood cell count (CBC), blood chemistry (Table S1), and ultrasonography (USG) (Figure 1). **Diagnosis:** Polycystic Kidney Disease (PKD). Differential diagnosis: Simple renal cysts and cysts due to chronic renal failure or tumors. **Prognosis:** Infausta. **Treatment:** Intravenous (IV) Ringer's lactate fluid therapy 45-60 ml/kg/day for 24 h, renal supplement RenaCor® 1 cap/day for cats ≤ 5 kg, white rice fermented with *Monascus purpureus* fungus (RMR, Flozindo®) 30 mg/cat/day, and NatureBridge® Vet Complete Prescription Wet Food for Cat Kidney.

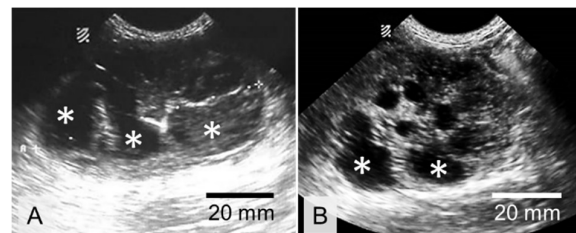


Figure 1 Hypoechoic cysts (white star) of various sizes were found in the cortex-medullary area of the right kidney (A) and left kidney (B).

**Received:** 26-02-2025 | **Revised:** 20-03-2025 | **Accepted:** 25-03-2025  
 Copyright © 2025 CC-BY-SA. This is an Open Access article distributed under the terms of the Creative Commons Attribution ShareAlike 4.0 International License (<https://creativecommons.org/licenses/by-sa/4.0/>).

## ■ RESULTS AND DISCUSSION

Ultrasound examination showed that the kidney was enlarged, measuring 6.37 cm (normal  $3.52 \pm 0.44$  cm) (Darawiroj & Choisunirachon 2019). In addition, the border between the cortex and medulla is unclear. Hypoechoic cysts of various sizes were observed in the renal cortex-medulla area (Figure 1). According to Scherk (2014), ultrasound examination can detect cysts  $> 2$  mm in diameter in the kidney. The diagnostic sensitivity of ultrasonography in cats older than 9 months was 91%. However, the gold standard examination of PKD1 needs to be confirmed in this case (Sim Lam *et al.* 2020).

The CBC examination showed hyperchromic macrocytic anemia Hb: 7.8 g/dL (normal 9.3–15.3), MCV: 52.6 fL (normal 28–49), HCT: 26.4% (normal 39–52), and MCHC: 295 g/dL (normal 300–380). Blood chemistry showed decreased ALP (13 U/L, normal 14–111), increased amylase (1528 U/L, normal 500–1500), and increased creatinine bilgen (363.1  $\mu$ mol/L, normal 44–212). CBC and blood chemistry results confirmed renal impairment (Table S1). The main cause of anemia is a deficiency in kidney-produced erythropoietin. Uremic toxins can activate erythropoietin or suppress its bone marrow response (Elliott *et al.* 2017). High creatinine levels indicate the development of stage 3 chronic kidney disease (2.9–5.0 mg/dL) (Chakrabarti *et al.* 2012).

There is no medicine available for PKD; therefore, therapy focuses on supportive care to relieve symptoms and improve the patient's quality of life (Nururrozi *et al.* 2021). In this case, the therapy provided was intravenous lactated Ringer's fluid, RenaCor, red mold rice (Flozindo®), and a special renal diet. Fluid therapy is aimed at overcoming dehydration. Lactated Ringer's solution was chosen because it can balance the pH and prevent acidic conditions that can arise from 0.9% NaCl, which contains high chloride and can cause renal vasoconstriction and a decreased glomerular filtration rate (GFR) (Langston & Gordon 2021).

RenaCor® is a probiotic containing *Lactobacillus acidophilus* and *L. rhamnosus*, which can reduce blood urea nitrogen and p-cresol levels (Fagundes *et al.* 2018). P-cresol is a toxin that triggers inflammatory reactions and damages the renal glomerulus, thereby reducing the kidney function (Liu *et al.* 2018). This probiotic can reduce urea toxin production by limiting its secretion into the colon, thereby decreasing blood urea nitrogen (BUN) levels (Huang & Chen 2024). Flozindo® (red mold rice) feed can increase hemoglobin, hematocrit, total leukocyte, and platelet levels (Suganya *et al.* 2023).

Renal-specific therapeutic feeding aims to improve the clinical symptoms of uremia, reduce electrolyte and mineral imbalances, optimize nutrition, and prevent further kidney damage. Key dietary strategies include restricting phosphorus, moderating protein intake, and ensuring adequate caloric intake to maintain the body's condition (Collins 2016). Twelve days after treatment at home, the

owner reported that the cat was improving, her appetite was stable, and her urine color returned to normal.

## ■ CONCLUSION

Based on a series of examinations, a Persian-Himalayan cat with PKD and a poor prognosis was identified. A combination of renal supplementation therapy, nutrition, and red mold rice can improve the physical condition of cats.

## ■ ASSOCIATED CONTENT

### Supporting Information

†The hematology and blood biochemistry examination were submitted in PDF form as supporting information.

## ■ AUTHOR INFORMATION

### Corresponding Author

\*NWHW: wayanhelpina@unud.ac.id

Laboratory Anatomy and Embryology, Faculty of Veterinary Medicine, Udayana University, Jl. P.B. Sudirman, Dauh Puri Klot, Denpasar, Bali 80234, INDONESIA

## ■ REFERENCES

- Bilgen N, Bişkin Türkmen M, Çınar Kul B, Isparta S, ŞenY, Akkurt M, Çıldır ÖŞ, Bars Z. 2020. Prevalence of PKD1 gene mutation in cats in Turkey and pathogenesis of feline polycystic kidney disease. *Journal of Veterinary Diagnostic Investigation*. 32(4):549-555.
- Chakrabarti S, Syme HM, Elliott J. 2012. Clinicopathological variables predicting progression of azotemia in cats with chronic kidney disease. *Journal of Veterinary Internal Medicine*. 26(2):275-281.
- Collins S. 2016. The role of nutrition in the management of cats and dogs with renal disease. *Veterinary Nursing Journal*. 31(8):237-240.
- Darawiroj D, Choisunirachon N. 2019. Morphological assessment of cat kidneys using computed tomography. *Anatomia Histologia Embryologia*. 48(4):358-365.
- Elliott J, Gregory FG, Jodi LW. 2017. *BSAVA Manual of Canine and Feline Nephrology and Urology* 3rd Edition. BSAVA, UK.
- Fagundes RAB, Soder TF, Grokoski KC, Benetti F, Hack Mendes R. 2018. Probiotics in the treatment of chronic kidney disease: A systematic review. *Brazilian Journal of Nephrology*. 40(3):278-286.
- Huang HW, Chen MJ. 2024. Exploring the preventive and therapeutic mechanisms of probiotics in chronic kidney disease through the gut-kidney axis. *Journal Agricultural Food Chemistry*. 72(15):8347-8364.
- Langston C, Gordon D. 2021. Effects of IV fluids in dogs and cats with kidney failure. *Frontiers in Veterinary Sciences*. 8(4):1-8.
- Liu WC, Tomino Y, Lu KC. 2018. Impacts of indoxyl sulfate and p-cresol sulfate on chronic kidney disease and mitigating effects of AST-120. *Toxins*. 10(9):1-22.
- Nururrozi A, Sampaguita AL, Widyarini S, Indarjulianto S. 2021. Clinical and hematological features of polycystic kidney disease on a Persian cat. *Veterinary Practitioner*. 22(2):49-51.
- Scherk M. 2014. Feline polycystic kidney disease. *Clinician's Brief*. [Feb 2 2025] Feline Polycystic Kidney Disease (cliniciansbrief.com).
- Sim Lam PPL, Reduan MFH, Jasni S, Shaari R, Shaharunizim N, Nordin ML, Abd Rahman A, Roslan NS. 2020. Poly-cystic kidney disease concurrent with feline parvovirus and bacterial infections in domestic shorthair cat: A case report. *Comparative Clinical Pathology*. 29:1283-1287.
- Suganya M, Nanthini AUR, Rajasekar A, Nandini MS, Lavanya G, Almutairi BO, Arunkumar P, Narenkumar J. 2023. Antihyperlipidemic effect of red fermented rice with *Monascus* sp. in rats model with hematological and histopathological studies. *Biomass Conversion and Biorefinery*. 1-10.