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Management of chronic kidney disease in a young adult-aged male domestic cat

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ABSTRACT: Chronic Kidney Disease (CKD) is an irreversible condition resulting in steady renal function deterioration. This decline impedes the ability of the body to regulate metabolism, fluids, and electrolytes. This paper reports the case of a young adult-aged male domestic cat, named Kuning, who was brought to the clinic with severe symptoms, including hematemesis, anorexia, and dehydration, and received intravenous fluid therapy via a 24G catheter. On the third day of hospitalization, ultrasonography revealed significant kidney abnormalities, including irregular cortical surfaces, indistinct cortico-medullary boundaries, focal hyperechoic areas in the cortex, and medullary ring sign. The urinary bladder appeared intact with an anechoic lumen. Liver ultrasonography revealed blunted edges in the right and left lobes and focal hyperechoic diffuse changes in the parenchyma, suggesting hepatic involvement. Following intensive treatment, Kuning's condition improved. Routine hematological tests on days 9 and 16-23 showed positive trends, with increased platelet counts and elevated leukocyte levels. Liver function improved compared to the initial assessments but remained outside the normal range. Based on anamnesis, clinical examination, and diagnostic findings, Kuning was diagnosed with CKD. After 27 days of intensive hospitalization, Kuning exhibited steady recovery, highlighting the importance of early diagnosis and comprehensive management in CKD cases.

Keywords:
chronic kidney disease, cat, ultrasonography, haematology, blood chemistry

■ INTRODUCTION

Chronic Kidney Disease (CKD) is a progressive condition that impairs kidney function, disrupting metabolic, fluid, and electrolyte balance (Suhardjono 2011). It reduces the kidney's ability to excrete waste and regulate electrolytes, leading to uremia and azotemia (Polzin 2011). In cats, CKD can result from pyelonephritis, glomerulonephritis, nephrolithiasis, or ureterolithiasis, with age, breed, diet, and periodontal disease being the contributing factors (Yanuartono *et al*. 2017). Impaired glomerulotubular function increases sodium retention, expands extracellular fluid volume, and triggers hypertension, which worsens kidney damage (Handayani *et al*. 2021). CKD is prevalent in geriatric cats (Brown *et al*. 2016). This paper discusses CKD in a young adult male domestic cat and highlights its clinical signs, diagnostics, and management.

■ CASE

Anamnesis and Signalment: Kuning, a 5-year-old male domestic cat with yellow fur, weighing 4.1 kg, was presented to the clinic with a urinary catheter in place. The owner reported symptoms including yellow-colored urine, vomiting, anorexia, polydipsia, and a small urinary bladder. **Physical Examination**: Kuning had a body temperature of 38.5°C, a capillary refill time < 2 s, and pale mucous membranes. Slow skin turgor indicated dehydration, while compromised circulation suggested anemia. **Laboratory Tests**: Routine hematology examination, blood chemistry tests, and ultrasound examination (Figure 1). **Diagnosis**: Chronic Kidney Disease (CKD). **Prognosis**: Dubious. **Treatment**: Tilmicosin (Tylolene-LA) (0.1 ml/kg BW, IM, twice daily) was administered to prevent secondary infections, while B Plex (0.1 ml/kg BW, IM, twice daily) provided vitamins and minerals. Sucralfate (2 ml/animal, oral, once daily) protected the gastric lining, and TF Plus (oral, once daily) supported immune function. Renate (2 g/animal/day, oral) and Renacor (oral, once daily) were administered as kidney supplements. Hematodin (0.1 ml/kg BW, IM, once daily) improved blood parameters, while Sangobion (1 ml/kg BW, IM, once daily) provided iron and vitamins. Samylin (1 tablet/kg BW, oral, once daily) supported liver function.

■ RESULTS AND DISCUSSION

Ultrasonographic examination revealed both kidneys had poorly defined surfaces with irregular anechoic renal patterns (Figure 1A, B). Further evaluation showed normal serosal

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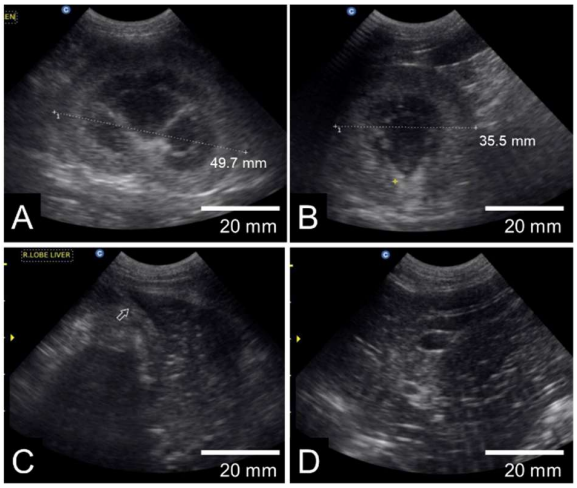

Figure 1. Sonogram of kidney and liver in a young adult-aged male domestic cat with chronic kidney disease. (A) right kidney, (B) left kidney, (C) liver lobes and (D) focal hyperechoic diffuse parenchyma.

appearance and intact vesicourethral integrity with anechoic luminal content. Renal function markers improved but remained below the optimal range. The liver displayed rounded edges in both lobes (Figure 1C), with focal hyperechoic diffuse changes in the parenchyma, warranting continued supplementation (Figure 1D).

Blood chemistry analysis showed azotemia with elevated blood urea nitrogen (BUN) and creatinine levels, indicating impaired renal function (Table 1). Elevated creatinine suggests disruptions in excretion due to kidney dysfunction, cardiac issues, or circulatory disturbances. After treatment with Renate and Renacore, BUN and creatinine normalized. However, owing to the progressive nature of CKD, long-term supplementation is essential to preserve kidney function (Yanuartono *et al*. 2017).

Hematological analysis revealed non-regenerative anemia with reduced RBC count, hemoglobin, and hematocrit, while MCV and MCHC remained normal (Table 1). After treatment, RBC, Hb, and HCT improved, closer to normal values. However, leukocyte levels remained elevated, reflecting ongoing inflammatory reactions in the kidneys and liver. This anemia was likely due to impaired erythropoietin synthesis, indicating chronic kidney dysfunction leading to

Table 1. Hematology and blood chemistry results pre- and post-treatment response on the young adult-aged male domestic cat.

Parameter	Treatment		Normal Range
	Pre	Post	
RBC (10^6/µL)	4.4	5.6	6 - 10
Hb (g/dL)	7.4	9.4	9.5 - 15
HCT (%)	22.6	29.4	24 - 45
PLT (10^5/µL)	0.67	1.0	1.5-6
WBC (µL)	25,800	24,200	5,500 - 19,500
AST/SGOT	10.7	9.55	5-55
ALT/SGOT	1.9	4.05	28-76
BUN (mg/dL)	158.3	22.19	22.19 - 158.3
Creatinine (mg/dL)	4.05	1.04	0.8 - 2.3

Note: RBC=- Red Blood Cells, Hb= Hemoglobin, HCT= Hematocrit, PLT= platelets, WBC= Leukocytes, AST= Aspartate transaminase, ALT= Alanine Aminotransferase, SGOT= Serum Glutamic Oxaloacetic Transaminase, BUN= Blood Urea Nitrogen

bone marrow suppression (Wirawan 2011). CKD diagnosis should ideally be confirmed using serum symmetric dimethylarginine levels, the gold standard for early detection (Dewi *et al*. 2024). However, due to limited assay availability, the diagnosis was based on CBC and blood chemistry results.

Fluid therapy with 0.9% sodium chloride (NaCl) infusion was administered to restore hydration and support cardiovascular and kidney function until the cat resumed eating and drinking (Ellison 2017). Additional treatments included Vitamin B (B-Plex®) for metabolic support, Transfer Factor Plus to enhance the immune response, and sucralfate to protect the gastric mucosa and prevent ulcers. After 27 days of hospitalization, the cat's condition stabilized and it was discharged once normal feeding resumed. Dietary management includes a renal-supportive diet, low in protein, phosphorus, and sodium, but rich in soluble fiber, acid-base buffers, B-complex vitamins, antioxidants, and omega-3 fatty acids (Yanuartono *et al*. 2017).

■ CONCLUSION

The cat was diagnosed with CKD and treated with supportive therapy. As CKD is incurable, ongoing monitoring and proper management are essential for maintaining its quality of life.

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