

## SUPPORTING INFORMATION

### **Pre-renal chronic kidney disease in a domestic cat presenting with FLUTD-like symptoms†**

Jasmine Yasyfa' Sukmayani<sup>1</sup>, Aliffa Pinqita Sabrina<sup>1</sup>, Maharani Wisesa Vidya Tresna<sup>1</sup>,  
Pranyata Tangguh Waskita<sup>2,\*</sup>

<sup>1</sup> Veterinary Professional Education Program, Faculty of Medicine, Padjadjaran University, Sumedang, Indonesia

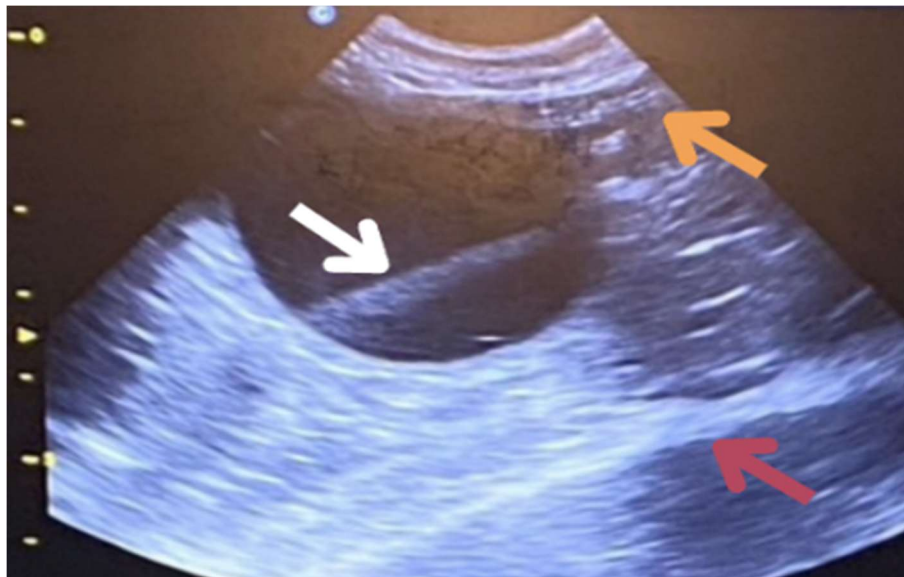
<sup>2</sup> Faculty of Medicine, Padjadjaran University, Sumedang, Indonesia

† Electronic Supplementary Information (ESI) available.

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## S1 Results of Sonogram of the Urinary Bladder

Ultrasonographic examination of the urinary bladder (vesica urinaria) revealed a hypoechoic mass within the bladder lumen, as indicated by the white arrow. This mass suggested possible inflammatory or purulent accumulation secondary to urinary obstruction. Visualization of the ureter (yellow arrow) and uterus (red arrow) provided anatomical reference points confirming the localization of the lesion within the lower urinary tract. The hypoechoic appearance may correspond to sediment, blood clots, or cellular debris associated with cystitis or secondary infection, consistent with the cat's clinical presentation of anuria and dehydration. These findings support the diagnosis of pre-renal azotemia with secondary urinary retention, guiding the decision to perform cystocentesis for both diagnostic and therapeutic purposes.



**Figure S1.** Ultrasonographic appearance of the urinary bladder (vesica urinaria). The white arrow indicates a hypoechoic mass within the bladder lumen, the yellow arrow identifies the ureter, and the red arrow denotes the uterus.

## S2 Results of Haematology and Blood Biochemistry Test

Hematological analysis showed leukocytosis ( $30.06 \times 10^9/L$ ) with neutrophilia ( $23.21 \times 10^9/L$ ) and monocytosis ( $1.47 \times 10^9/L$ ), indicating an inflammatory process. Increased neutrophil and monocyte levels suggest a chronic inflammatory response, likely from urinary tract infection or tissue necrosis. Decreased erythrocyte count ( $6.29 \times 10^{12}/L$ ), hemoglobin (9.0 g/dL), and hematocrit (28.59%) indicated mild non-regenerative anemia, common in cats with chronic kidney disease due to reduced erythropoietin production. These findings indicate systemic inflammation with renal-associated anemia.

Initial serum analysis showed severe azotemia with elevated BUN ( $>100$  mg/dL) and creatinine (20.56 mg/dL), indicating reduced GFR. These findings suggest pre-renal or early intrinsic renal injury from dehydration and obstruction. Hyperphosphatemia (10.98 mg/dL) indicated impaired renal excretion. Elevated amylase (2208 U/L) and CK (655 U/L) levels suggested pancreatic or muscular involvement. Hyperbilirubinemia (0.9 mg/dL) and hyperglycemia (194 mg/dL) reflected metabolic disturbance. After treatment, serum biochemistry showed improved renal parameters with decreased BUN (41.2 mg/dL) and creatinine (3.18 mg/dL), suggesting CKD. Bilirubin (0.44 mg/dL) and glucose (131 mg/dL) normalized, while increased amylase ( $>3500$  U/L) indicated pancreatic stress. Elevated globulin (5.6 g/dL) and decreased A:G ratio (0.45) suggested an inflammatory response.

Table S1. Results of haematology and blood chemistry examinations

| Parameter                             | Results            | Unit                   | References    |
|---------------------------------------|--------------------|------------------------|---------------|
| <b>Haematology</b>                    |                    |                        |               |
| Leukocyte                             | 30.06 <sup>+</sup> | $10^9/\text{liter}$    | 3.50 – 20.70  |
| Monocyte                              | 1.47 <sup>+</sup>  | $10^9/\text{liter}$    | 0.09 – 1.21   |
| Neutrophil                            | 23.21 <sup>+</sup> | $10^9/\text{liter}$    | 1.63 – 13.37  |
| Erythrocyte                           | 6.29 <sup>-</sup>  | $10^{12}/\text{liter}$ | 7.70 – 12.80  |
| Haemoglobin                           | 9.0                | g/dl                   | 10.0 – 17.0   |
| Hematocrit                            | 28.59              | %                      | 33.70 – 55.40 |
| <b>Blood Chemistry Pre-treatment</b>  |                    |                        |               |
| BUN                                   | > 100              | mg/dL                  | 14-36         |
| Creatinine                            | 20.56              | mg/dL                  | 0.6-2.4       |
| Glucose                               | 194                | mg/dL                  | 74-114        |
| Bilirubin total                       | 0.9                | mg/dL                  | 0.1-0.4       |
| CK                                    | 655                | U/L                    | 56-529        |
| Phosphor                              | 10.98              | P                      | 2.4-8.2       |
| Amylase                               | 2,208              | u/L                    | 100-1,200     |
| <b>Blood Chemistry Post-treatment</b> |                    |                        |               |
| BUN                                   | 41.2               | mg/dL                  | 14-36         |
| Creatinine                            | 3.18               | mg/dL                  | 0.6-2.4       |
| Glucose                               | 131                | mg/dL                  | 74-114        |
| Bilirubin total                       | 0.44               | mg/dL                  | 0.1-0.4       |
| Amylase                               | >3,500             | u/L                    | 100-1,200     |
| Globulin                              | 5.6                | g/dL                   | 2.3-5.3       |
| A:G Ratio                             | 0.45               | -                      | 0.45-1.2      |

\*Note: + = higher; – = lower; red indicates abnormality

S3 Results of Urinalysis

Urinalysis revealed abnormalities indicating impaired renal function and urinary tract inflammation. Nitrite (+) and trace leukocytes suggested bacterial infection. Glucose and ketone bodies indicate altered carbohydrate metabolism due to anorexia or dehydration. Low urine specific gravity (1.005) reflects poor concentrating ability, indicating chronic kidney disease (CKD). A urine pH of 8 suggested alkaline urine from bacterial urease activity. Marked proteinuria (++++), reduced creatinine (0.9), and microalbumin (10 µg/mL) demonstrated compromised glomerular and tubular function, supporting CKD with urinary tract infection.

Table S3 Urinalysis results

| Parameter        | Results | References |
|------------------|---------|------------|
| Nitrite          | +       | -          |
| Leukocytes       | Trace   | -          |
| Glucose          | Trace   | -          |
| Specific gravity | 1,005   | 1,000      |
| pH               | 8       | 5          |
| Ketone           | Large   | -          |
| Creatinine       | 0.9     | 4.4        |
| Microalbumin     | 10      | 80         |
| Protein          | ++++    | -          |

Description: red color indicates abnormality