

An SDMA case study: Jimmy



Patient: Jimmy, 13-year-old, neutered male domestic shorthair

Presenting reason: Jimmy was brought in for his annual checkup and vaccines.

History: He was an indoor/outdoor cat, and his owner reported that Jimmy seemed to be doing fine and that there were no current concerns.

Physical examination: Jimmy was bright, alert, and responsive (BAR). Normal temperature, pulse, and respiration rate were observed. He had good muscle mass and a good body condition score. Remainder of physical examination unremarkable, except for some moderate periodontal disease.

Chemistry

	8/13/15 (Order Received) 8/13/15 7:49 AM (Last Updated)	IDEXX Reference Laboratories
Glucose	87	72 - 175 mg/dL
BUN	28	16 - 37 mg/dL
Creatinine	2.1	0.9 - 2.5 mg/dL
IDEXX SDMA Learn More	a 23	0 - 14 µg/dL
BUN:Creatinine Ratio	13.3	
Phosphorus	5.1	2.9 - 6.3 mg/dL
Calcium	9.8	8.2 - 11.2 mg/dL
Sodium	156	147 - 157 mmol/L
Potassium	4.5	3.7 - 5.2 mmol/L
Na:K Ratio	35	29 - 42
Chloride	121	114 - 126 mmol/L
TCO ₂ (Bicarbonate)	19	12 - 22 mmol/L
Anion Gap	21	12 - 25 mmol/L
Total Protein	7.1	6.3 - 8.8 g/dL
Albumin	3.3	2.6 - 3.9 g/dL

Urinalysis

	8/13/15 (Order Received) 8/13/15 7:49 AM (Last Updated)	IDEXX Reference Laboratories
Collection	CYSTOCENTESIS	
Color	STRAW	
Clarity	HAZY	
Specific Gravity	1.015	
pH	6.0	
Protein	NEGATIVE	
Glucose	NEGATIVE	
Ketones	NEGATIVE	
Blood / Hemoglobin	NEGATIVE	
Bilirubin	NEGATIVE	
Urobilinogen	NORMAL	
White Blood Cells	NONE SEEN	
Red Blood Cells	0-2	
Bacteria	NONE SEEN	
Epithelial Cells	2+ (3-5)	
Mucus	NONE SEEN	
Casts	NONE SEEN	
Crystals	NONE SEEN	
Other	AMORPHOUS DEBRIS	

Diagnostic plan

A dental cleaning was recommended, and samples were collected for a preanesthetic screen for complete blood count (CBC); chemistry panel, including the IDEXX SDMA™ Test; total T₄; and a complete urinalysis.

Diagnostic review

- Noteworthy abnormalities found on Jimmy's laboratory/diagnostic tests included an **increased SDMA* of 23 µg/dL**, and a **low urine specific gravity of 1.015**.
- The balance of the diagnostics, including creatinine and total T₄, were within the reference intervals.
- SDMA is an earlier and more reliable biomarker for kidney function than creatinine and warrants follow-up investigation when increased.**

Hematology

	8/13/15 (Order Received) 8/13/15 7:49 AM (Last Updated)	IDEXX Reference Laboratories
RBC	7.89	7.12 - 11.46 M/µL
Hematocrit	36.3	28.2 - 52.7 %
Hemoglobin	11.7	10.3 - 16.2 g/dL
MCV	46	39 - 56 fL
MCH	14.8	12.6 - 16.5 pg
MCHC	32.2	28.5 - 37.8 g/dL
% Reticulocyte	0.2	%
Reticulocyte	16	3 - 50 K/µL
WBC	8.4	3.9 - 19 K/µL
% Neutrophil	62.3	%
% Lymphocyte	14.6	%
% Monocyte	6.6	%
% Eosinophil	16.4	%
% Basophil	0.1	%
Neutrophil	5.233	2.62 - 15.17 K/µL
Lymphocyte	1.226	0.85 - 5.85 K/µL
Monocyte	0.554	0.04 - 0.53 K/µL
Eosinophil	1.378	0.09 - 2.18 K/µL
Basophil	0.008	0 - 0.1 K/µL
Platelet	301	155 - 641 K/µL
Remarks	SLIDE REVIEWED MICROSCOPICALLY.	

Total T₄

	8/13/15 (Order Received) 8/13/15 7:49 AM (Last Updated)	IDEXX Reference Laboratories
Total T ₄	a 2.1	0.8 - 4.7 µg/dL
<p>a Interpretive ranges: <0.8 Subnormal 0.8-4.7 Normal 2.3-4.7 Grey zone in old or symptomatic cats >4.7 Consistent with hyperthyroidism</p> <p>Cats with subnormal T₄ values are almost exclusively euthyroid sick or overtreated for their hyperthyroidism. Older cats with consistent clinical signs and T₄ values in the grey zone may have early hyperthyroidism or a concurrent non-thyroidal illness. Hyperthyroidism may be confirmed in these cats by adding on a free T₄ or by performing a T₃ suppression test. Following treatment with methimazole, T₄ values will generally fall within the lower end of the reference range (0.8 - 2.3).</p>		

Next steps

- The owner was informed that some supportive care and follow-up were indicated for Jimmy ahead of his dental procedure.
- **Increased access to drinking water** (bowl outside, and on different levels inside the home), **a diet designed for senior patients¹**, and a recheck appointment in 2 weeks were recommended.
- Other considerations included diagnostic imaging of the kidneys and associated structures and assessment of blood pressure.

Follow-up and diagnosis

- Jimmy presented 1 month later and his lab work showed that **SDMA remained increased but stable at 19 µg/dL and his urine specific gravity was unchanged at 1.015**. The remainder of his lab results remained within the reference interval.
- An abdominal ultrasound showed no evidence of urinary stones or infection but small kidneys, consistent with chronic kidney disease (CKD).
- Systolic blood pressure was 175 mm Hg, which was persistently increased when Jimmy was rechecked a few days later.
- With the results in hand, and following the International Renal Interest Society (IRIS) CKD Staging Guidelines, **Jimmy was diagnosed with IRIS CKD Stage 2 disease**. It was determined that **Jimmy be placed on medication for his high blood pressure and that his owners switch him to a kidney therapeutic diet** while continuing to provide him several fresh water sources.

IRIS CKD Staging Guidelines

		Stage 1 No azotemia	Stage 2 Mild	Stage 3 Moderate	Stage 4 Severe
Creatinine in mg/dL	Stage based on stable creatinine				
	Canine	<1.4	1.4–2.0	2.1–5.0	>5.0
	Feline	<1.6	1.6–2.8	2.9–5.0	>5.0
SDMA in µg/dL		>14	>14	Moderately increased	Markedly increased
	Consider understaged based on creatinine		≥25	≥45	
UPC ratio	Substage based on proteinuria				
	Canine	Nonproteinuric <0.2	Borderline proteinuric 0.2–0.5	Proteinuric >0.5	
	Feline	Nonproteinuric <0.2	Borderline proteinuric 0.2–0.4	Proteinuric >0.4	
Systolic blood pressure in mm Hg	Substage based on blood pressure				
		Normotensive <150		Borderline hypertensive 150–159	Hypertensive 160–179
		Hypertensive 160–179		Severely hypertensive ≥180	

SDMA = IDEXX SDMA™ Test
See iris-kidney.com for more detailed staging, therapeutic, and management guidelines.

*Symmetric dimethylarginine

Reference

1. Hall JA, MacLeay J, Yerramilli M, et al. Positive impact of nutritional interventions on serum symmetric dimethylarginine and creatinine concentrations in client-owned geriatric cats. *PLoS One*. 2016;11(4):e0153654.

© 2016 IDEXX Laboratories, Inc. All rights reserved. • 109729-00

All ®/TM marks are owned by IDEXX Laboratories, Inc. or its affiliates in the United States and/or other countries. The IDEXX Privacy Policy is available at idexx.com.

Discussion

Cases like Jimmy's are common for general practitioners, and his case **reinforces that even a single elevation in SDMA warrants further investigation and possible management**.

SDMA detects problems sooner, and it is more reliable than creatinine in assessing kidney function. Making modest changes in Jimmy's access to fresh water and **instituting a kidney therapeutic diet contributed to the effort of possibly slowing the progression of Jimmy's kidney disease**.

Jimmy's kidney disease was able to be appropriately monitored and managed prior to his dental procedure. **During his dental procedure, additional precautions were also taken to protect his kidneys.** Longer-term regular appointments can be scheduled to monitor his kidney disease more closely thanks to the early detection afforded by SDMA. This will allow for earlier identification and treatment of kidney disease progression and complicating conditions.

For more information on treatment of chronic kidney disease, visit www.iris-kidney.com/guidelines/recommendations.html or visit idexx.com/sdma

