

An SDMA case study: Molly



Patient: Molly, 7-month-old, intact female shih tzu

Presenting reason: Molly presented for a routine ovariohysterectomy (OVH).

History: Molly was purchased healthy from a breeder at 2 months of age. Molly's diet consisted of Kirkland Signature® puppy food and she reportedly had a good appetite. While Molly had occasional household accidents, Molly's owners thought nothing of it, as they felt it might have been part of house training or just her excitable nature, and that it would improve with time.

Physical examination: Molly was bright, alert, and responsive (BAR). She was well-hydrated and had a normal temperature, pulse, and respiratory rate. Her body condition score (BCS) was excellent, and her weight was stable.

Diagnostic plan

Complete blood count (CBC); chemistry panel, including the IDEXX SDMA™ Test and electrolytes; the SNAP® 4Dx® Plus Test; and a complete urinalysis as a presurgical screen were recommended.

Laboratory findings

Molly's presurgical diagnostic results showed a negative SNAP 4Dx Plus Test, a normal CBC, and the following chemistry findings.

Chemistry

The screenshot shows the IDEXX VetConnect PLUS interface for Molly. The top navigation bar includes Home, Directory of Services, Imaging, and Telemedicine. Below the navigation, there are icons for profile, history, and communications, along with an 'Order Diagnostics' button. A date navigation bar shows dates from EC 31 to AUG 9. The main content area displays a chemistry panel for a test performed on 8/9/2015 at 7:54 AM. The results are as follows:

Test	Result	Reference Range	Visual Indicator
Glucose	113	63 - 114 mg/dL	Normal
BUN	30	9 - 31 mg/dL	Normal
Creatinine	1.0	0.5 - 1.5 mg/dL	Normal
IDEXX SDMA	^d 20	0 - 14 µg/dL	Abnormal (High)
Potassium	4.7	4.0 - 5.4 mmol/L	Normal
Total Protein	5.1	5.5 - 7.5 g/dL	Abnormal (Low)
Albumin	3.1	2.7 - 3.9 g/dL	Normal
Globulin	2.0	2.4 - 4.0 g/dL	Abnormal (Low)
Alb:Glob Ratio	1.6	0.7 - 1.5	Abnormal (High)
ALT	31	18 - 121 U/L	Normal
ALP	91	5 - 160 U/L	Normal
Hemolysis Index	^e N		Normal
Lipemia Index	^f ++		Abnormal (High)

Diagnostic review

- Increased SDMA* result guides us to investigate further— Additional finding of low total protein as a result of low globulins is considered normal in puppies. **The increased SDMA result was indicating an issue with kidney function.**
- Next step considerations—**A complete urinalysis should accompany an increase in SDMA.** Additional diagnostics could include imaging of the kidneys as well.
- Status of OVH appointment—Further investigation of the laboratory results was recommended to rule out any conditions that could complicate Molly's surgery.

Urinalysis

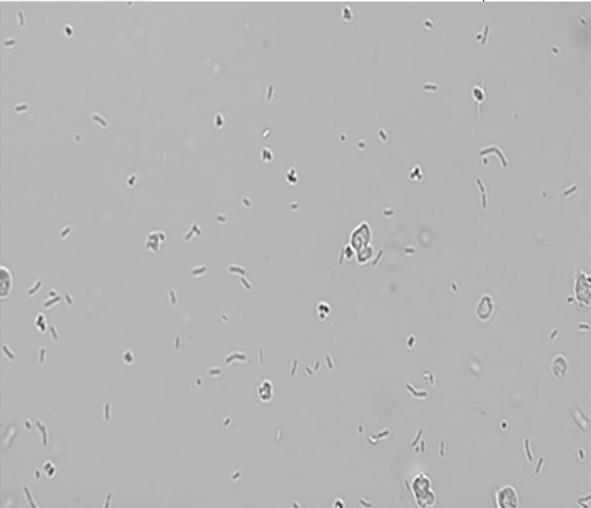
IDEXX VetConnect⁺PLUS Home | Directory of Services | Imaging | Telemedicine

MOLLY profile history communications Order Diagnostics

DEC 31 NOV 21 OCT 7 OCT 2 OCT 2 SEP 12 AUG 14 AUG 9

8/14/2015 (Order Received) IDEXX Reference Laboratories
8/14/2015 @ 4:32 AM (Last Updated) Show Details

Collection	---	CYSTOCENTESIS
Color		YELLOW
Clarity		CLOUDY
Specific Gravity		1.022
pH		6.5
Protein		NEGATIVE
Glucose		NEGATIVE
Ketones		NEGATIVE
Blood / Hemoglobin		NEGATIVE
Bilirubin		NEGATIVE
Urobilinogen		NORMAL
White Blood Cells		6-10
Red Blood Cells		0-2
Bacteria	---	MODERATE (9-40/HPF)
Epithelial Cells	---	RARE (0-1)
Mucus		NONE SEEN
Casts	---	NONE SEEN
Crystals	---	NONE SEEN
Other	---	AMORPHOUS DEBRIS PRESENT



Diagnostic review following SDMA signal to investigate further

- Molly's complete urinalysis showed a urine specific gravity of 1.022, with white blood cells and rod-shaped bacteria on sediment evaluation. The urine was submitted to the reference laboratory for a urine culture and MIC (minimum inhibitory concentration) sensitivity.
- Diagnostic imaging can hold value for identifying and localizing disease—Molly's ultrasound showed both kidneys slightly decreased in size and mild bilateral renal pelvic dilation.

Discussion

Molly's single SDMA result led to the investigation and ultimate diagnosis of active kidney injury (AKI), specifically pyelonephritis along with concurrent renal dysplasia. Antibiotic therapy based on the urine culture and MIC sensitivity findings proved valuable in getting the infection under control, and Molly's urinalysis was normal at her 1-month follow-up appointment. Additionally, her SDMA returned to within normal limits at that recheck following treatment.

SDMA is more reliable than creatinine as a biomarker of kidney health, and elevations outside of normal limits should be investigated further for the underlying cause. For cases like Molly, it can identify a health situation that is treatable and establish a longer-term monitoring plan for blood work and urinalyses to guard against infections the patient can be predisposed to.

*Symmetric dimethylarginine