



CASE HISTORY

Case #: C16-01636

Presenter: Stacy Clothier, Katie Boes, Sarah Barrett

Signalment: 8-year-old neutered male Australian Shepherd

History and Physical Examination:

- History – Two day history of lethargy, anorexia, and vomiting following foreign body removal (peach pit) via two enterotomies by rDVM
- Physical examination – Painful abdomen on palpation, clean dry intact abdominal incision

Clinical Pathology: A direct preparation of the peritoneal fluid is provided in the slide set.

CBC			REF. INT. & UNITS	PLASMA CHEM			REF. INT. & UNITS
Plasma App	Ict		Normal (N)	Glucose	96		88 – 121 mg/dL
Plasma Protein	5.6	L	6.2 – 8.0 g/dL	BUN	43	H	9 – 30 mg/dL
RBC	9.21	H	5.93 – 8.59 x 10 ⁶ /uL	Creatinine	1.34	H	0.70 – 1.30 mg/dL
HGB	21.8	H	14.1 – 21.1 g/dL	Phosphorous	6.2	H	1.9 – 4.4 mg/dL
HCT	58.3		42.7 – 61.9 %	Calcium	8.0	L	9.4 – 10.7 mg/dL
MCV	63.3	L	66.4 – 77.4 fL	Total protein	4.9	L	5.3 – 7.0 g/dL
MCHC	37.4	H	32.9 – 36.0 g/dL	Albumin	2.1	L	2.8 – 3.7 g/dL
Retic %	0.82		0.18 – 1.15 %	Globulins	2.9		2.5 – 3.8 g/dL
Retic #	75.5		13.3 – 95.9 x 10 ³ /uL	ALT	25		16 – 75 U/L
nRBCs	0		0 – 1/100 WBC	ALP	226	H	8 – 70 U/L
WBC	9.8	H	5.01 – 15.55 x 10 ³ /uL	GGT	3		1 – 5 U/L
Seg Neuts	5.4		2.45 – 9.17 x 10 ³ /uL	Total bilirubin	1.4	H	0.2 – 0.4 mg/dL
Band Neuts	0.58	H	0 – 0 x 10 ³ /uL	CK	295	H	32 – 193 U/L
Lymphocytes	1.27		0.91 – 3.28 x 10 ³ /uL	Cholesterol	171		129 – 332 mg/dL
Monocytes	2.44	H	0.08 – 1.16 x 10 ³ /uL	Triglycerides	188		29 – 291 mg/dL
Eosinophils	0		0.00 – 1.90 x 10 ³ /uL	Sodium	128	L	143 – 152 mEq/L
Basophils	0		0.00 – 0.00 x 10 ³ /uL	Potassium	2.9	L	3.4 – 4.5 mEq/L
Platelets	313		150 – 393 x 10 ³ /uL	Chloride	97	L	110 – 119 mEq/L
				TCO ₂	18		18 – 25 mEq/L
				Anion gap	15.9		12.3 – 18.5 mEq/L

PERITONEAL FLUID	RESULT	UNITS
Color	Orange	
Clarity	Turbid	
Protein	3.4	g/dL
Nucleated Cells	101,480	/uL
RBC	80,000	/uL





CASE SYNOPSIS

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Cytologic Findings: The sample is highly cellular and of good diagnostic quality. There are numerous inflammatory cells (85% degenerate neutrophils, 14% activated macrophages, and 1% small lymphocytes) and occasional reactive mesothelial cells (e.g., binucleate forms, increased cytoplasmic basophilia) and erythrocytes on a moderately eosinophilic background containing pyknotic cells, protein crescents, extracellular mixed bacterial bacilli and cocci, extracellular round to ovoid 3-4 um yeast, refractile crystalline material (barium), large basophilic rectangular to angular occasionally striated structures (muscle), and mature keratinocytes. The bacteria, yeast, and crystalline material are also phagocytized by neutrophils and macrophages. The large basophilic rectangular structures are frequently surrounded by inflammatory cells. Rare erythrophagia is noted.

Cytologic Interpretation: Septic inflammatory exudate with mixed bacteria, fungal yeast, digesta, and barium

Confirmatory Testing: Aerobic culture of the peritoneal fluid grew *Enterobacter cloacae* and *Morganella morganii* ss *morganii*. Communication with the rDVM revealed that a barium contrast study was previously performed. After the peritoneal fluid evaluation, the patient underwent a laparotomy. There was dehiscence of the orad enterotomy site with diffuse fibrinous peritonitis and adhesions.

Comment: The presence of mixed bacteria, yeast, digesta, and barium were compatible with dehiscence of the initial enterotomy site. The patient's peritonitis was due to a combination of sepsis and barium. Free barium in the abdominal cavity forms nodular aggregates on serosal surfaces of the peritoneal cavity organs, followed by partial or complete phagocytosis of the aggregates. These barium aggregates cause adhesion to adjacent organs. Within hours of barium mixing with intestinal contents, viscera clump together in extensive adhesions, which trap intestinal contents and bacteria. A third laparotomy was performed after nine days of hospitalization, which identified worsened diffuse fibrinous peritonitis and adhesions. Given the grave prognosis, euthanasia was elected.

References:

Ko JJ et al. Barium peritonitis in small animals. *Journal of Veterinary Medical Science*. 2014; 76(5): 621-8.
Renschler, J et al. What is your diagnosis? Particulate material in peritoneal fluid from a dog. *Veterinary Clinical Pathology*. 2008, 37(1). 129-132.

