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SIGNALMENT

1-year-old Quarter Horse

HISTORY AND CLINICAL FINDINGS

A yearling Quarter Horse colt was presented to the University of Wisconsin Large Animal Hospital for castration, having been rescued two weeks earlier with 10 other horses from a farm where horses exhibited signs of neglect and starvation. Prior medical history was not known by the rescue organization. The colt was dewormed with pyrantel pamoate 10 days prior to admission. No other medications were given. He had been fed hay and grain after being rescued. He did not have access to pasture.

On physical examination, the colt was slightly lethargic, with poor body condition and minimal muscle mass (body score 2.5/9). His rectal temperature was normal, respiratory rate was mildly increased (20-28 breaths per minute) and heart rate was increased (60-80 beats per minute). Oral mucosa and conjunctiva were remarkably pale. Pitting edema was present in the hind fetlocks and capillary refill time was slightly prolonged. Increased cranial ventral right lung sounds and a grade 2/5 heart murmur were auscultated. An echocardiogram of the heart did not reveal an abnormality, nor did an ultrasound examination of the abdomen and chest.

LABORATORY FINDINGS

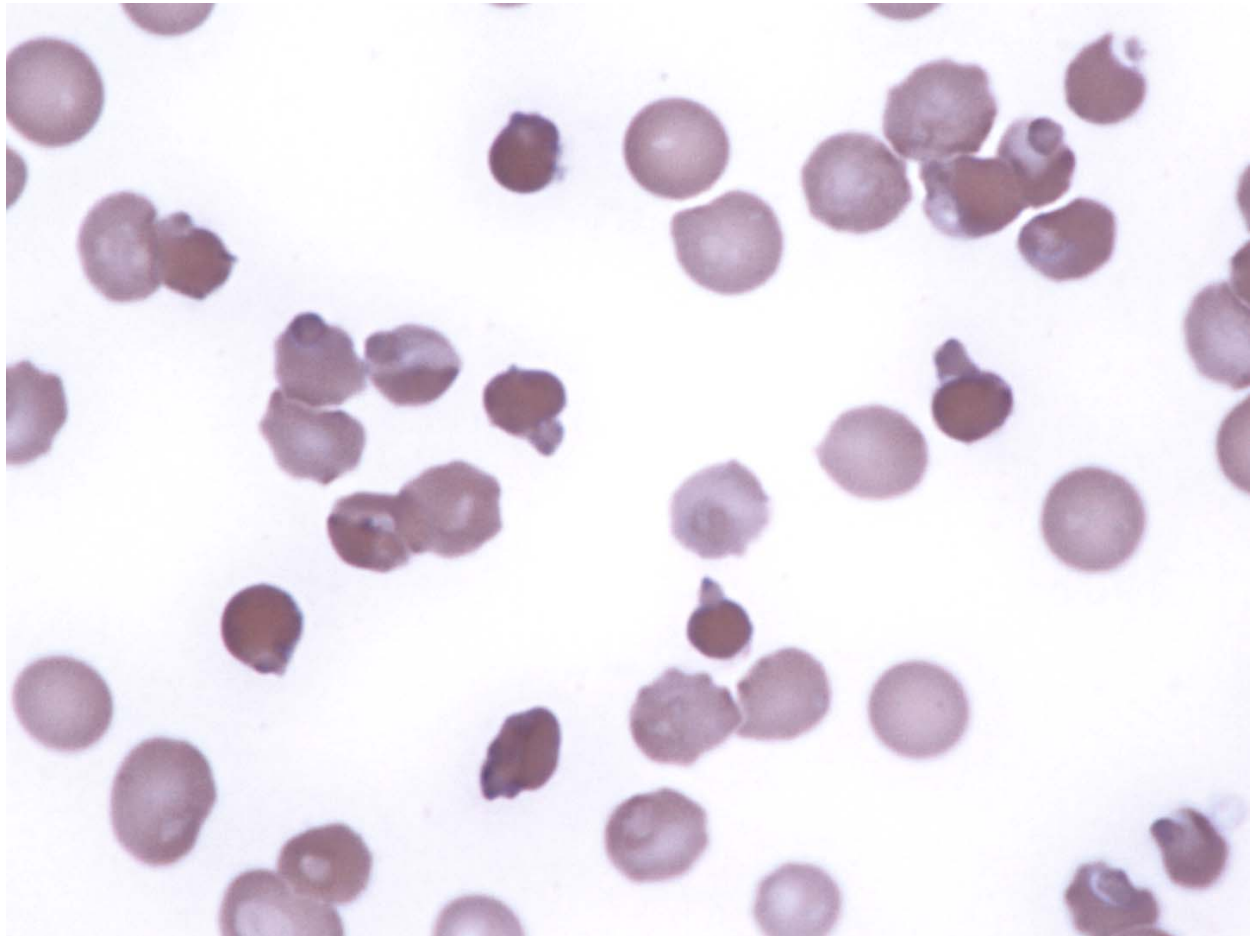
Blood was collected for a CBC (Advia 120) and clinical chemistry panel (Hitachi 912), and urine was collected for a urinalysis. CBC results are given in Table 1.

Table 1. Hematology findings

Parameter	Colt Day 1	Colt Day 3	Reference Interval
HCT (L/L)	0.12	0.13	0.32-0.49
MCV (fL)	48	48	34-58
MCHC (g/L)	362	364	310-370
CHCM (g/L)	365	364	Not Determined
Total Protein (g/L)	86	88	60-85
Fibrinogen (g/L)	6	6	1-4
Platelets (x10 ⁶ /L)	300	315	100-400
Total leukocytes (x10 ⁶ /L)	19.1	18.1	5.0-12.5
Neutrophils (x10 ⁶ /L)	15.6	15.1	2.7-6.7
Lymphocytes (x10 ⁶ /L)	3.2	2.5	1.5-5.5
Monocytes (x10 ⁶ /L)	0	0.2	0-0.8
Eosinophils (x10 ⁶ /L)	0.2	0.2	0-0.9

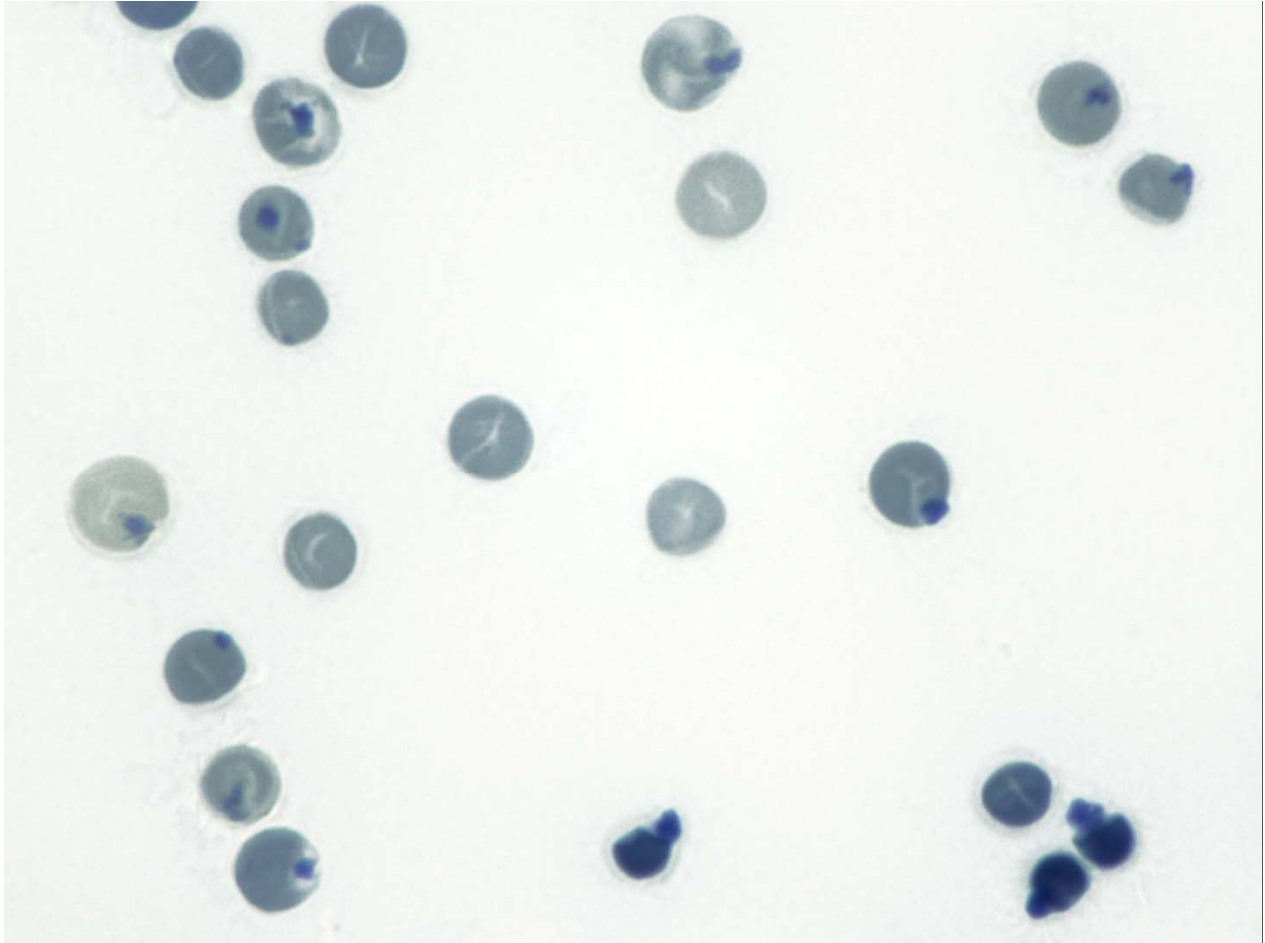
Microscopic examination of erythrocyte morphology revealed 2+ anisocytosis and 3+ Heinz bodies (Figure 1). Some erythrocytes were spherocytic with a single Heinz body protruding from the cell. Heinz bodies appeared as pale inclusions in some cells and occasional lysed erythrocytes containing Heinz bodies were seen (Figure 3A).

Figure 1. Wright-Giemsa stained blood film.



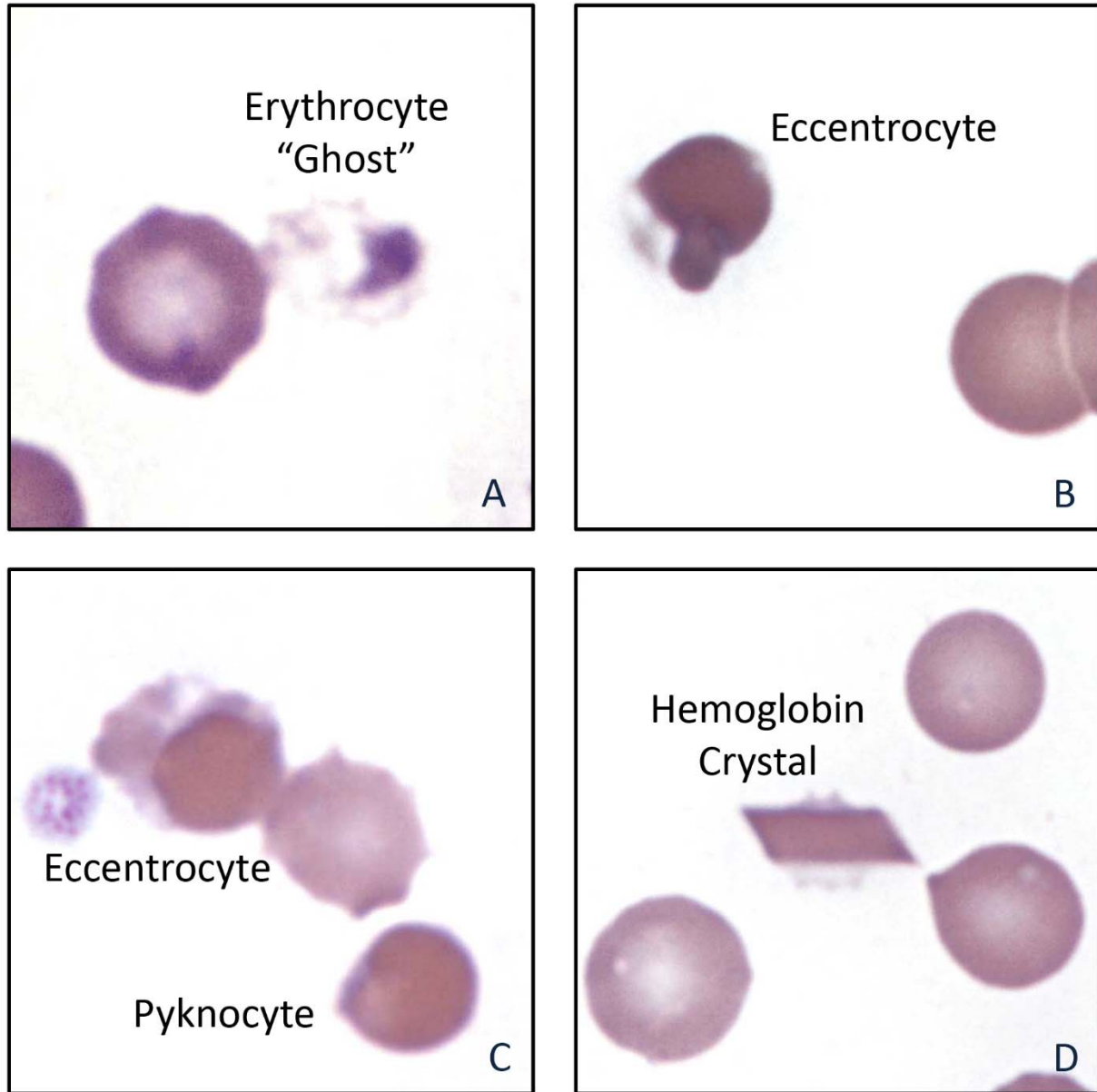
A reticulocyte stain revealed additional Heinz bodies not easily identified by the Wright-Giemsa stain (Figure 2). Spherocytic erythrocytes containing Heinz bodies stained deeply basophilic in the reticulocyte stain (Figure 2, bottom right)

Figure 2. Reticulocyte stained blood film



Eccentrocytes were uncommon, and when present, they also contained a single Heinz body (Figure 3B) or loose aggregates of precipitated hemoglobin (Figure 3C). Some erythrocytes appeared as pyknocytes (Figure 3C). Rare hemoglobin crystals were seen by visual scanning blood films (Figure 3D).

Figure 3. Wright-Giemsa stained blood films



All serum chemistry analytes were within reference intervals except bilirubin (103 $\mu\text{mol/L}$, reference interval 7-56 $\mu\text{mol/L}$), total protein (85 g/L, reference interval 52-82 g/L), albumin (27 g/L, reference interval 28-38 g/L), and total globulin (58 g/L, reference interval 21-38 g/L). Serum protein electrophoresis revealed a mild increase in beta-2 globulins.

Results from the urinalysis (Table 2) were considered normal except for being positive for bilirubin. Methemoglobin was 8% of total hemoglobin when measured spectrophotometrically. A Coggins test for equine infectious anemia was negative.

Table 2. Urinalysis

TEST	RESULT	TEST	RESULTS
Color	Amber	pH	8.5
Appearance	Cloudy	Protein/SSA	Neg
SG	1.020	Glucose	Neg
Sediment: many calcium carbonate crystals		Ketones	Neg
		Bilirubin	Pos
		Heme	Neg

QUESTIONS:

What would be included in your differential diagnostic list?

What additional history would you inquire about?

What additional tests would you request?