

CYSTIC FLUID FROM A LIVER LESION IN A HORSE

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Signalment:

15-year-old Cob mare

Clinical history:

One-year history of muscle and weight loss despite a normal appetite and no evidence of dental disease. Vaccinations and deworming were up to date. The horse was foaled and raised in England and it had never been abroad.

Clinical findings:

Temperature, pulse and respiratory rate were within normal limits. Thoracic and abdominal auscultations revealed no abnormalities and increased digital pulses or warm feet were not noted on physical examination.

Diagnostic procedures:

Initial clinicopathological data (Table 1 - April) revealed hyperproteinemia, hyperglobulinemia and a low albumin:globulins ratio. Hyperfibrinogenemia (heat precipitation method) and mildly increased CK activity were also detected. Endogenous ACTH was within its reference interval for the time of the year.

	April*	May**	December*	Units
WBC	9.6 (6.0-12.0)	11.8 (6.00-12.00)	11.2 (6.0-12.0)	x10 ⁹ /l
Neutrophils	6.0 (2.7-6.0)	8.6 (3.00-7.00)	6.4 (2.7-6.0)	x10 ⁹ /l
Lymphocytes	2.6 (1.5-5.0)	2.0 (1.50-5.00)	4.0 (1.5-5.0)	x10 ⁹ /l
Monocytes	0.4 (0.0-0.7)	0.7 (0.20-1.00)	0.3 (0.0-0.7)	x10 ⁹ /l
Eosinophils	0.6 (0.0-0.9)	0.5 (0.00-1.00)	0.4 (0.0-0.9)	x10 ⁹ /l
RBC	7.21 (5.50-9.50)	5.87 (5.50-9.50)	6.06 (5.50-9.50)	x10 ¹² /l
Haemoglobin	12.5 (8.0-14.0)	10.9 (8.00-14.00)	10.5 (8.0-14.0)	g/dl
Hct	34 (24.0-44.0)	29.8 (24.00-44.00)	29.0 (24.0-44.0)	%

MCV	47.2 (39.0-52.0)	50.8 (39.00-52.0)	47.9 (39.0-52.0)	fl
MCH	17.3 (15.2-18.6)	18.6 (15.20-19.00)	17.3 (15.2-18.6)	pg
MCHC	36.8 (30.0-35.0)	36.7 (30.00-37.00)	36.2 (30.0-35.0)	g/dl
Platelets	210 (90-400)	184 (90.00-400.00)	252 (90-400)	x10 ⁹ /l
Total protein	91.2 (55.0-80.0)	88 (52.00-80.00)	88.6 (55.0-80.0)	g/l
Albumin	28.3 (25.0-38.0)	28.0 (28.00-39.00)	23.2 (25.0-38.0)	g/l
Globulin	62.9 (20.0-43.0)	60.0 (13.00-52.00)	65.4 (20.0-43.0)	g/l
Albumin:globulin ratio	0.4 (0.5-2.4)	0.5	0.4 (0.5-2.4)	
Fibrinogen	4.9 (1.0-4.0)		5.7 (1.0-4.0)	g/l
Serum Amyloid A	0.1 (0.0-10.0)		0.0 (0.0-10.0)	mg/l
Urea	5.4 (2.5-8.3)	5.8 (3.57-8.93)	6.9 (2.5-8.3)	mmol/l
Creatinine	76 (50-155)	54 (62.00-159.00)	75 (50-155)	umol/l
Bile acids	4.2 (0.0-20.0)		6.5 (0.0-20.0)	umol/l
Total bilirubin	13.4 (10.0-40.0)	14.0 (0.00-43.00)	12.9 (10.0-40.0)	umol/l
GGT	23.0 (0.0-34.0)	40.0 (10.00-55.00)	24.0 (0.0-34.0)	u/l
AST	388 (10-594)		458 (10-594)	u/l
ALP	240 (1-250)		272 (1-250)	u/l
CK	560 (0-540)		654 (0-540)	u/l
GLDH	4.6 (0.0-12.0)		9.3 (0.0-12.0)	u/l
Calcium	3.11 (2.60-3.50)	3.24 (2.75-3.55)	3.12 (2.60-3.50)	mmol/l
Phosphate	0.81 (0.80-1.80)		0.99 (0.80-1.80)	mmol/l
Potassium	4.24 (2.80-5.30)	3.8 (3.20-5.50)	3.88 (2.80-5.30)	mmol/l
Sodium	135 (134-145)	139 (130.00-142.00)	134 (134-145)	mmol/l
Chloride	99 (98-102)	100 (95.00-108.00)	98 (98-102)	mmol/l
Triglycerides	0.10 (0.01-0.87)		0.15 (0.01-0.87)	mmol/l
ACTH	11.80 (<30)		20.90 (<30)	pg/ml
Glucose		6.2 (4.44-6.61)		mmol/l

*Sysmex XT-2000i, Milton Keynes, UK and Beckman Coulter, High Wycombe, UK

**Boule Medical AB, Boule Diagnostics AB, Spånga, Sweden and Fuji Film Dri-Chem NX500i, St Martins Way, UK

Table 1 – Haematology, biochemistry and endocrinology laboratory test results
(reference intervals between brackets)

Ultrasonographic examination of the abdomen revealed a mildly increased wall thickness of the large colon on the right side of the abdomen and an approximately 47 mm in diameter, hypoechoic, cystic structure in the liver (Figure 1). Doppler mode showed this structure not to be vascularised.

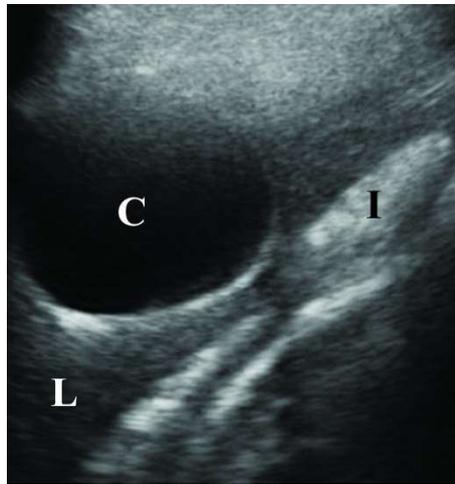


Figure 1 – Abdominal ultrasound (L - liver; C – cyst; I – intestine)

Treatment and follow-up:

The horse was treated with albendazole (25 mg/kg; 400 mg/tablet, PO, BID for 30 days), doramectin for feather mites ([10mg/ml], 3 ml/100Kg, 50 ml IM, 2 weeks apart) and suxibuzone (3g/day, 1.5 g sachets, PO, BID). Clinical re-assessment revealed loud gut sounds on both sides and short-term, self-resolving diarrhoea. In-house general clinicopathological data (Table 1 – May) showed a mild, mature neutrophilia, mild hyperproteinemia with moderate hyperglobulinemia and low creatinine. Electrolytes were within their respective reference intervals.

Faecal parasitology and bacteriology (*Clostridium perfringens* and *Clostridium difficile* toxins, *Salmonella* spp and *Campylobacter* spp) were negative.

Six months later, a repeat ACTH measurement (Table 1 – December) was also within its reference interval. At this stage, self-resolving diarrhoea recurred. A third haematology and biochemical profile revealed hyperproteinemia, hypoalbuminemia, hyperglobulinemia, hyperfibrinogenemia, high ALP activity, high CK activity and low-normal hyponatremia. Dexamethasone (20 ml, 0.2% w/v) IM injections were given once a day for approximately 1.5 months. After 13 days, the dose was reduced by 1 to 2 ml every week as there was a good clinical response.

Euthanasia was elected approximately 1 month later due to further weight loss and the owner's perception of poor welfare of the horse.

A full necropsy was carried out. In addition to poor condition, gross examination revealed one white liver cyst on the caudo-dorsal aspect of the right liver lobe (Figure 2) and a thickened area of the small intestine.

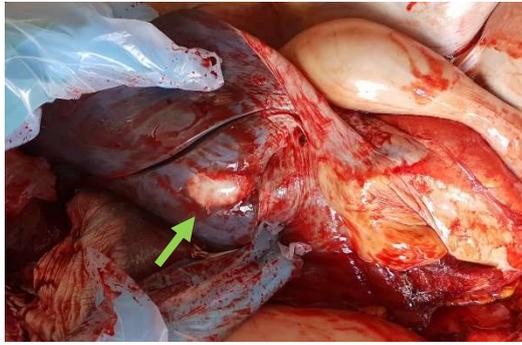


Figure 2 – Liver cyst (green arrow) noted during necropsy

Fluid from the liver cyst was collected in an EDTA tube and submitted for cytological examination.

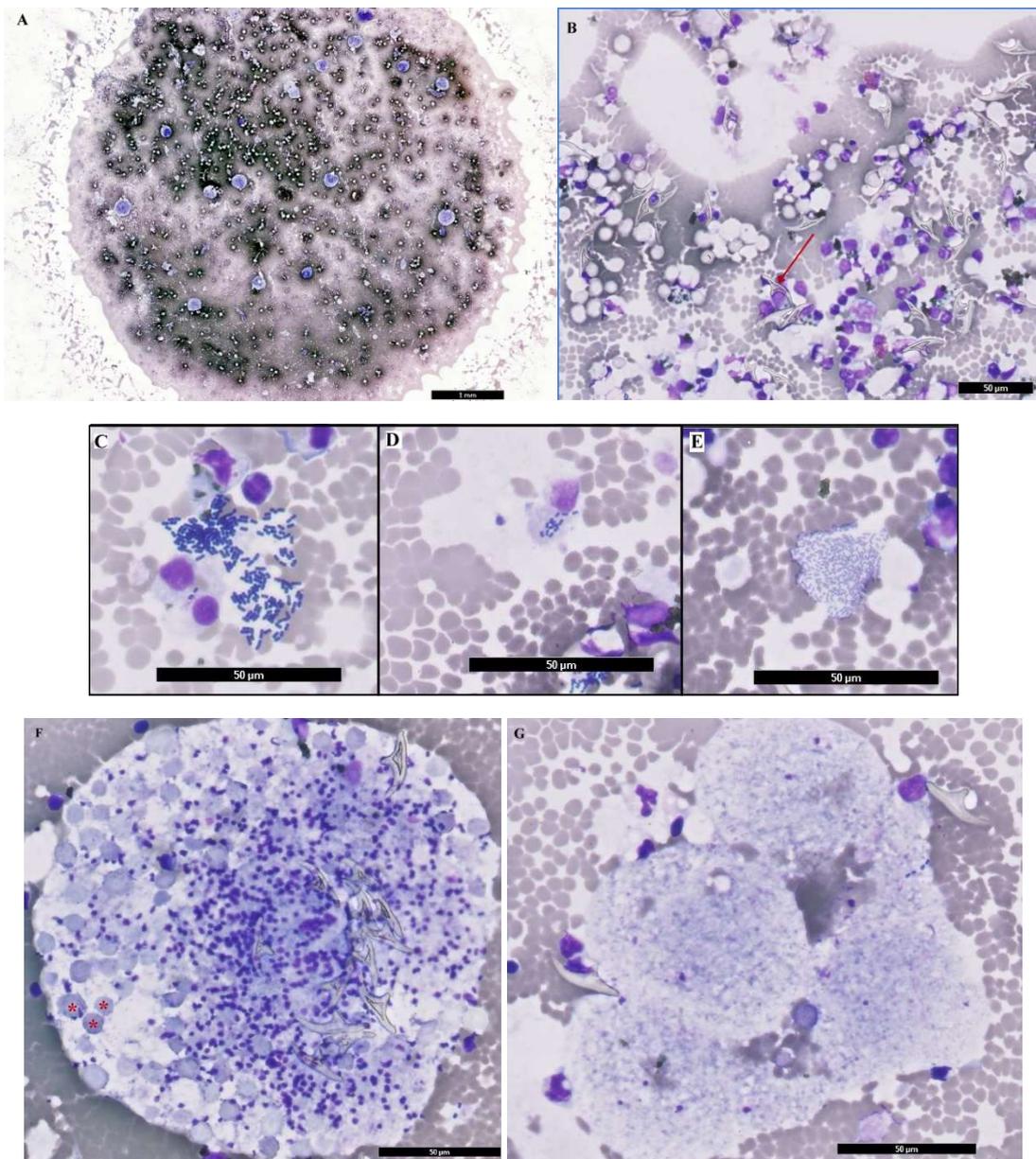


Figure 3 – Cyto-centrifuge preparation of cystic fluid from a liver lesion (Wright-Giemsa stain)

Questions:

1. List three differential diagnoses for the liver lesion.
2. Enumerate the cells and non-cellular structures discernible in the cytological preparations.
3. What is the most likely infectious agent in this case?