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Abdominal pain in a horse

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Signalment and History:

A 30-year-old local breed horse with an acute abdomen was admitted to a referral centre for large animals. On physical examination, the horse demonstrated severe abdominal pain even after NSAID administration and had elevated heart rate (60 beats/minute), respiratory rate of 45 breaths/minute, capillary refill time of 3 seconds. Nasogastric intubation was performed and resulted in spontaneous reflux of approximately 25 L of fluid. The packed cell volume was 60% (reference interval 32-52%) and selected serum biochemistry findings can be found in Table 1. The rectal temperature was 38.0°C. No intestinal sounds were detected by auscultation all over the abdomen. Many distended small intestinal loops were palpated per rectum. Abdominocentesis was also performed; a large amount of reddish fluid, with a protein concentration of 45 g/l and red blood cells content of 20 per cent, were obtained. Measurement of amylase and lipase activity in the peritoneal fluid sample revealed them to be elevated at 490 IU/L (0-14 IU/L) and 280 IU/L (0-36 IU/L), respectively.

Based on these clinical and laboratory findings, which are your main differential diagnoses?

Differential diagnoses include atropinin toxicity, duodenitis, proximal jejunitis, acute pancreatitis, equine grass sickness, small intestine incidents, obstructions, volvulus or peritonitis.

Based on the results of the imaging and anamnesis, peritonitis was assumed to be the most likely diagnosis in the present case.

Further course

The horse was repeatedly pushed nasal tubes over a treatment period of 9 days and also received NSAIDs, spasmolytica and cholinesterase inhibitors alternately,

broad-spectrum antibiotics and parenteral nutrition. The case was followed for over a year: it was successfully resumed in racing and the owner did not notice any further signs of pancreatitis or other abdominal disease.

Summary

Acute pancreatitis is rarely diagnosed in horses (in vivo) and the actual prevalence is probably underestimated. Typically, pancreatitis develops secondarily to other gastrointestinal, hepatic or endocrine diseases. In horses, different forms of pancreatitis are distinguished depending on the clinical course: acute, chronic and chronically active. There is no known predisposition regarding race, age or sex, however, the disease is more often described in adult animals and rarely in foals.

As a pathogenesis, an activation of pancreatic enzymes that subsequently lead to an autodigestion of pancreatic tissue is assumed. This induces necrosis of the azini and pancreatic islets with intestinal fat necrosis and necrotizing vasculitis. The release of pancreatic enzymes stimulates the release of inflammatory cytokines, which further drives the inflammatory cascade and can lead to a severe systemic inflammatory response syndrome (SIRS), multi-organ failure, shock or death.

An initial diagnosis of pancreatitis in horses is difficult because there are no specific tests available. Although the diagnostic significance of amylase and lipase from serum or abdominal cavity puncture are not well studied, in some cases they are used to support diagnosis. However, both are not specific to pancreatitis. Even minor tissue damage to the intestinal mucosa or renal tubules can lead to slight increases in serum amylase and lipase. Most affected horses die or are euthanized, but in a few cases successful treatment is described.

Table 1. Selected serum biochemistry values

Parameter		Reference interval
Total protein	8.6 g/dL	5.3 - 7.9 g/dL
Creatinine	4.54 mg/dL	0.9 - 2.0 mg/dL
Lactate	7.6 mmol/L	up to 2 mmol/L