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Case Report

Hemoperitoneum secondary to cecocolic dilation in a pregnant mare

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ABSTRACT

Hemoperitoneum is known as the abnormal accumulation of blood within the abdominal cavity, most commonly caused by gastrointestinal bleeding, abdominal abscesses, liver tumors, migration of parasitic larvae (*Strongylus vulgaris*), direct trauma and blood clotting disorders. Lethargy, anorexia, weakness, muscle twitching, sweating, hyperthermia, tachycardia, tachypnea, and the accumulation of free fluid in the abdomen were the most commonly recorded signs. In this report, a pregnant mare was diagnosed with hemoperitoneum secondary to cecocolic dilatation, due to corn ingestion. The protocol for clinical treatment and tests varies in similar reported cases. Due to this, the present report discusses the outcome of a clinical case and suggests a medical protocol -based on evidence – for treatment in a pregnant mare. The treatment was aimed to stop the bleeding, while normalize or maintain a stable blood pressure and provide supportive therapy. The mare presented colic pains due to fermentation of the corn, which were solved in few hours. The final abdominal ultrasonogram showed intra-abdominal hypoechoic fluid and living fetus.

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1. Introduction

Hemoperitoneum is the abnormal accumulation of blood within the abdominal cavity. As Conwell et al. [1] define, causes of hemoperitoneum may include gastrointestinal bleeding, abdominal abscesses, liver tumors, migration of parasitic larvae (*Strongylus vulgaris*), direct trauma and coagulation disorders.

Mogg et al. [2] reported a case of postpartum hemoperitoneum in a mare and Tweedie et al. found hematoperitoneum in two mares with granulosa tumors [3]. Tweedie et al. [3] explained that a careful examination of the patient is required besides specialized diagnostic techniques, an even then it is not always possible to establish the etiology.

A rupture of the uterine artery near or after delivery could cause hemoperitoneum in pregnant mares. Bleeding of the reproductive

tract in pregnant mares has a morbidity rate of 3% and represents a 40% mortality rate. The bleeding tends to occur during the first 48 h after birth, and other structures may also be affected such as the internal iliac artery and terminal aorta [3,4].

Some of the clinical signs the patient may present are lethargy, anorexia, weakness, muscle twitching, sweating, hyperthermia, tachycardia, tachypnea, and accumulation of free fluid in the abdomen. The main visible symptom is moderate abdominal pain in 78% of the cases, and only 7% have severe abdominal pain. Diagnostic tests include; abdominocentesis, exploratory laparotomy, abdominal fluid cytology, abdominal ultrasound and transrectal palpation [1,4].

Knowledge of the pathophysiology and physiological response to the hemorrhage is important to distinguish the clinical signs that characterize other pathologies (acute abdomen). A detailed and effective diagnosis plan is vital to identify the hemoperitoneum and avoid irreversible damage or death.

The protocol for clinical management and diagnostic tests vary in reported cases. Due to this, the present report discusses the handling of hemoperitoneum through a clinical case and suggests a medical protocol-based on evidence – for treatment in horses. In this study, the Problem-Oriented Medical Record (POMR) approach was applied to the clinical protocol.

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2. Case presentation

2.1. Animal description

On October 14th, 2014, an 8-year-old Appaloosa breed equestrian patient was admitted to the Veterinary Hospital of Large Species of the Autonomous University of the State of Mexico, (UAEM), with a zootechnical function to walk, with an approximate gestation period of 5 months and weighing 442 kg.

2.2. Case history

The owner reported that the mare escaped from the barn and ate excessive amounts of corn. Approximately at 4:00 pm, the horse began to show signs of severe abdominal pain (colic). At the place of origin, a dosage of 500 mL of vegetable oil given orally (PO), beer PO (traditional and empirical treatment) and 20 mL of intravenous Dipyrone were administered to the animal, but the patient continued with severe pain. The owner then decided to contact the UAEM Veterinary Hospital of large species.

2.3. Physical and laboratory examinations

Upon hospital admission, the mare showed intense pain, making it difficult to handle. It wallowed and banged itself against the trap gate and ground. The animal was uncontrolled, a sedative was administered to facilitate the physical examination.

Heart rate was 58 BPM, which is 18 beats above the normal physiological range (20–40 beats per min) indicating tachycardia. Respiratory rate was 38 BPM, also 18 breaths above the normal physiological range (12–20 bpm) confirming tachypnea. Mucous membrane was congested. Capillary refill time was >2 sec. Rectal temperature was 38.6 °C, slightly above normal ranges of 37.5–38.5 °C for adult horses.

A decrease in the sounds from the left and right quadrants was found, suggesting the presence of paralytic ileus. Abdominal distension was observed, waist circumference was shown at 1.92 m. The mare had sweating and the vulva showed a hematoma and reddish mucous secretion.

A blood test was done for a hematocrit measurement (htt), resulting in 0.30 l/l, below the averaged range (0.32–0.52 l/l). Total plasma protein of 6.4 g/dL (6–8 g/dL) was found within normal physiological range.

The physical examination was concluded and the patient still showed severe pain with a poor response to an alpha-2 adrenergic agonist.

2.4. List of problems

1. Abdominal distension
2. Abdominal pain
3. Bulbar abnormal discharge
4. Congested mucous membrane
5. Hyperthermia
6. Tachycardia
7. Tachypnea
8. Decreased bowel sounds
9. Vulva hematoma with bloody mucus
10. Ingestion of vegetable oil
11. Poor response to adrenergic alpha2 agonist
12. Sweating

2.5. Main list

- I. Abdominal distension (1, 2, 4, 6, 7, 8, 10, 11, 12)
- II. Abdominal pain (3, 6, 7, 9, 11)

2.6. Differential diagnosis

1. Greater colon impaction, 2. Large colon torsion 3. Uterine torsion
4. Hemoperitoneum, 5. Strangulation of the small intestine

2.7. Diagnosis planning

Upon hospital admission, the patient's physiological signs were out of range. Xylazine HCl was administered IV (1.1 mg/kg), being a sedative of choice for its alpha2 agonists properties, analgesia and muscle relaxation. The full dosage was administered every 5 min during five consecutive times with no response (sedation).

Later on, a dose of 40 µg/kg of Detomidine was intravenously administered. Since this drug is a strong sedative and pain killer, it allowed us to perform the physical examination, testing and treatments, which included a rectal palpation, catheter placement, nasogastric tube, cecocentesis, paracentesis and ultrasound examination. While performing the nasogastric tube, large amounts of corn were obtained, confirming the consumption of such grain. A second rectal palpation was performed in which no obvious pathological changes were detected.

The ultrasound examination was performed using a Digital ultrasonic diagnostic imaging system, model DP 22000 for veterinary use 100–240, 50/60 Hz, 3.5 MHz transducer, semi-convex. Ultrasonography revealed severe distention and thickening of the small (Fig. 1), and large intestines.

2.8. Final diagnosis

Cecocolic dilation.

2.9. Treatment planning

Butorphanol 0.03 mg/kg was given IV as analgesic (Tourbo-gesic®, Zoetis, Es), and a nasogastric emollient of Dioctyl sulfosuccinate sodium (DSS) was administered at a 5% dose of 10–20 mg/kg in 6 L of water (Seguril®, Sanofi, Es). This was administered once to the gastric easily decompose and remove the gastric content via tube.

In regards to the abdominal distention, a cecocentesis was performed in the right side area between the last rib and the tuber coxae to release the cecal gases. The area was previously shaved and aseptically prepared for a local blockage of 2% lidocaine solution (Xilocaína® Astra Chem, Mx, 5 mL) and deepened with a 16G catheter. Crystalloid fluid therapy 2 L/h was started, in a total of



Fig. 1. Ultrasonogram showing severe distention and thickening of the small bowel. Image taken from ventral left flank.

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