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Abdominal Colic as a Result of Intestinal Obstruction by Enteroliths in an 8 Years Old Stallion: A Case Report

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Abstract: The correction of enterolithiaisis in this case report was carried out by manual traction as the "stone" was lodged proximal to the ileo-cecal junction. This is a rare "fit" as the condition is mostly managed only surgically. Under mild sedation and with proper restraint using a crutch in a standing position, rectal enema alongside massive lubrication using a rectal lubricant was employed to manipulate the stone until it was successfully removed. The stone weighed 0.75 kg and its measurement length and breadth were 7.5 and 4.5 inches, respectively. Mild bleeding that resulted was managed by applying digital pressure on the affected part of the rectum and intravenous administration of vitamin K injection at 5 mg kg^{-1} was given. Animal was placed on maize bran and other less fiber diet for 5 days to allow proper healing of the rectal area to take place. The animal recovered fully 14 days after correction.

Key words: Enteroliths, Intestinal obstruction, alfalfa hay, injection, healing

INTRODUCTION

Enteroliths is derived from the Greek word, "entero" meaning intestine and "lith" which means stone. Enteroliths form around small foreign objects swallowed by an animal such as pebble, sand, wood or plastic and grows much like a pearl grows around a grain of sand in an oyster (Robert, 1983). To continue growing, the enteroliths needs a supply of magnesium, phosphorus and ammonia as well as a relatively alkaline digestive tract.

Excessive dietary minerals such as magnesium, phosphate or calcium, ingestion of foreign objects, lack of pasture grazing and prolonged stall confinement is also implicated (Steven, 1985). Excessive alfalfa hay in take has especially been implicated in the formation of enteroliths in the horses. Alfalfa provides the gut with a large amount of minerals including Mg and Ph. Also Alfalfa hay tends to alkalinize (raise the pH) the pH of the normally acidic (low pH) intestinal environment (Blue and Wittkapp, 1981).

Enteroliths may cause chronic, intermittent colic in horses (Colgan *et al*., 1997). The more common presentation is acute onset of mild to moderate colic with failure to pass feces. The heart rate in 50-70 per min, bouborygmy are decreased but not absent and there is mild abdominal distention. Rectal examination may reveal mildly distended large colon but the offending Enteroliths is rarely palpable only in very few cases (Ragle *et al*., 1992).

Radiography of the abdomen is useful in indentifying enteroliths in horses with colic (Yarbough *et al*., 1994). The accuracy of the diagnosis is approximately 80% for Enteroliths in the large colon and 40% for those in the small colon (Rose *et al*., 1987). The most common reason for not detecting an Enteroliths is poor imaging of the abdomen because of inadequate penetration by the x-ray beam (Evans *et al*., 1998).

MATERIALS AND METHODS

Case report: An 8 year old Arabian breed Stallion weighing about 450 kg, belonging to a client was presented to the Veterinary Hospital Gombe with the chief complaint of persistent colic and complete anorexia.

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Fig. 1: Enterolith showing vertical length measurement

Fig. 2: Enterolith showing horizontal length measurement

History revealed restlessness, pawning, bellowing, rolling on the ground and kicking at the abdominal area. After the animal was properly restrained, auscultation revealed rapid pulse rate of 38.0 beat/min, increased respiratory rate of 16 cycles/min and rectal temperature of 38.2°C. The animal was said to not have defected for 1 week. Yellowish mucus membrane of the 3rd eye lid was noticed. There was bouborygmy of the stomach on abdominal auscultation. Animal was reported to have been eating from a trip of sharp sand that served as its bedding.

Management of the case: Blood was taken to parasitology laboratory for haemoparastic screening/baseline haemogram. Rectal enema was carried out as follows: Using 1×1/2 diameter stomach tube which was inserted in a 500 mL conical flask containing warm water mixed with mild detergent, the solution was allowed by positive gradient to enter the rectum through the other end that had already being inserted into the rectum for a distance of 5cm. After 30 min, peristaltic movement of Gastrointestinal tract was initiated with no feces coming out.

Rectal examination to access the location of the obstruction was carried out as follows: Using an obstetrical glove which was liberally lubricated using k-jelly lubricant (Johnson and Johnson), entrance was gained into the rectum as far as the proximal part of the ileo-cecal junction where the hard mass was felt. With careful manual traction, the stone was successfully removed leaving traces of blood resulting from mild lacerations which was stopped by digital pressure (Fig. 1 and 2).

Result from Parasitology Laboratory indicates equine babesiosis++, PCV 29%, WBC 8.3%, Monocytes 1%, lymphocytes 55%, Nuetrophils 39%, basophils 0%, total protein 1%.

RESULTS

Treatment:

- Pain management was instituted by administration of Buscopan injection at a dose rate of 2.5 mg kg^{-1} for 3 days, the pain if resolved is intended to check all physical injuries that could occur with the patient restlessness
- Magnesium sulphate (Epsom salt) which is an osmotic cathartic was administered at a dose rate of (50 g/200 kg) 1 g/4 kg. This is to enhance bowel movement and softening the already hard fecal material and to facilitate defecation
- Gentamycin injection at a dose rate 0.2 mg kg^{-1} for 5 days to prevent any secondary bacteria that might act as an opportunistic agent as a result of the procedure carried out
- Diminazene accurate at a dose rate of 1 mL/10 kg was administered intramuscularly as a remedy for equine babesiosis following the laboratory result
- Tetanus Anti-Toxin (TAT), 3000 IU was given intramuscularly as prophylaxis

DISCUSSION

As a result of the mild babesiosis (+) and considering the body score of the animal (not excellent), there was a slight decrease in the haematocrit concentration, possibly from haemolysis of the red blood cells an increase in white blood count above normal most probably is a response by the body defense mechanism triggered by injury/lacerations in the rectal wall during manipulation of the stone.

Although, chemical analysis of the stone was not done, previous research done by Lloyd *et al*. (1987), indicates chemical properties to include manganese, phosphorus, calcium, sulphur, potassium, titanium aluminum and nickel. These make up 10% of enteroliths while the remaining 90% is made up of struvite (a hydrous phosphate of magnesia and ammonia) and vivianite (a hydrous phosphate of iron). As a result of the

above composition, enteroliths are much heavier than expected, therefore, leading to the only option for management as surgical intervention depending on the location of the "stone".

The first successful report of surgical removal of an Enterolith was in 1877 (Lloyd *et al*., 1987). According to Bojia *et al*. (2006), 27% of colic related cases emanating from enterolithiaisis have been documented in Donkeys in Ethiopia. While it is rare for Enteroliths to be lodged at the ileo-cecal junction, this case was managed through rectal traction because the enterolith was located proximal to the ileo-cecal junction.

CONCLUSION

In the management of enterolithiaisis, after radiographic examinations have been analyzed and the location of the "stone" is confirmed, surgical option in always the best especially where the stone is too tight to be manually dislodged. Manual traction of enteroliths in horses or donkey is location dependent, in this case report, the success of this case is suggestive of the location of the stone. Intestinal hemorrhage and intestinal rupture are bound to occur if manual traction is applied. Diet, genetic factors and management are predisposing factors to enterolith formation in horses if proper care is taken, the rate of this condition will be minimized. Conclusively, surgical intervention is the best way to manage enteroliths in horses.

RECOMMENDATIONS

- Decrease the intestinal pH levels by adding one up (250 mL) of vinegar a day to your horse diet
- Adding more grain while reducing hay will also decrease the pH level in the colon
- Reduce or eliminate brain from your horse's diet since from provides high level of phosphorus
- Replace Alfalfa has with grass hay or groundnut hay
- Increase feeding times to three or four times a day since this will increase the movement of bulk feed materials through the intestinal tract which should provide less favorable environment for stones to incubate and grow
- Avoid long stall confinement and provide lots of daily exercise which also helps increase intestinal movement of feed
- For bedding, use straw instead of shaving. The straw will provide a high filer material to nibble on which is low in protein, magnesium or phosphorus

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