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Fatal Faecolith in Donkeys- Review of Two Cases

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ABSTRACT

Gastrointestinal diseases manifesting as colic are common in donkeys. This present report describes the presentation and diagnosis of pelvic flexure impaction by faecolith in the colon of two donkeys. The donkeys were reported at different times with history of lack of faecal production, sweating, inappetence, and reduced borborygmus, in 2016 and 2020. They were dull, depressed with head down and ears back. The distal end of the right ascending colon was severely impacted with loose faeces, the transverse colon contained a hard mass (faecolith) just at the pelvic flexure junction. The clinical signs which may be intermittent, duration and temperament of the donkey, nature of feed, water intake and/or teeth problem may serve as indicators of faecolith diagnosis in future recurrence. Faecoliths causing significant clinical signs surgical removal may be carried out under general anaesthesia. The colonic contents and the faecolith may be removed by a pelvic flexure enterotomy.

Keywords: Donkey, Faecolith, Pelvic flexure, Impaction, Donkeys, Feed, Colon, sweating, inappetence

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1. INTRODUCTION

The donkey (*Equus africanus asinus*) is a domesticated member of the Equidae (*Nowak 1999,* Rossel et al 2008). The wild ancestor of the donkey is the African wild ass, *E. africanus*, first domesticated around 3000 BC, probably in Egypt or Mesopotamia (*Vilstrup et al 2013*), and have spread around the world. They continue to fill important roles in many places today. The donkey has been used as a working animal for at least 5000 years. There are more than 40 million donkeys in the world, mostly in underdeveloped countries, where they are used principally as draught or pack animals. Working donkeys are often associated with those living at or below subsistence levels. Donkeys spend more than half of each day foraging and feeding, often on poor quality scrub (Taylor 1997). They have a tough digestive system where roughage is efficiently broken down by hind gut fermentation, microbial action in the caecum and large intestine (Wood et al 2005, Smith and Wood 2008). Although donkeys are known to survive with little management, their body condition and health condition may fluctuate during the year with feed supply (Nengomasha et al 1995).

Gastrointestinal diseases which may present as colic are common in these animals worldwide. One of the most common causes of colic in donkeys is pelvic flexure impaction from poorly masticated feedstuffs or foreign bodies, followed by impactions of the transverse colon and cecum (Thiemann and Sullivan 2019). Faecolith is a hard discreet mass of inspissated faeces. It can cause obstruction in the small or large colon resulting in colic and reduced faecal output (Bernard 1993). The faecolith forms around an initial nidus of indigestible plant material or a small foreign body, such as thread, string or rubber. Obstruction due to faecoliths usually occurs at the narrower portions of the gut, at the pelvic flexure, small colon and transverse colon. The severity of clinical signs depends on the degree of obstruction and complications (McClure, et al1992). To the best of our knowledge, no report describes faecolith impaction in the donkey in our environment. The present report describes the presentation and diagnosis of faecolith with in the colon.

2. CASE DESCRIPTION

The two donkeys; A- was about 10 year old and B- was 13 year old both male donkeys, weighing about 171 kg. They were presented to the University of Ibadan Veterinary Teaching Hospital, Ibadan, Nigeria with history of frequent and prolonged lateral recumbency. The donkeys were reported at different times with history of lack of faecal production, sweating, inappetence, and reduced borborygmus, in 2016 and 2020. They were dull, depressed with head down and ears back. Their rectal temperature was above 38^{o}C (normal: 37.2-38.3). Blood sample was collected and submitted to the Veterinary Clinical Pathology laboratory. The animals grazed well, although exhibited unusually recumbency at intervals with sand bath actions. The animals were managed with appropriate medication and supportive therapy. The donkeys were found dead in the stable, and full postmortem was done separately in 2016 (A) and 2020 (B).

The carcasses were fresh and in good body condition, except for a few bruises. The mucous membranes of the eyes and mouth were slightly pale. The thoracic and peritoneal cavities contained about 700ml and 1litre of serous fluid respectively (A). There were petechial haemorrhages on the subcutis and abdominal fat. There were petechial to ecchymotic haemorrhages on the parietal pleura, diaphragm, caudate lobes of the lungs the pericardium, epicardium, myocardium and suffusive on the right ventricular endocardium. The lung was wet with froth in the airways. There were also diffuse petechial to ecchymotic haemorrhages on abdominal visceral organs including the liver, spleen, serosal surfaces of the intestines, and cortical surfaces of the kidneys. A few fibrin tags were present on the capsular surface of the liver while the parenchyma had foci of fibrotic scars.

The distal end of the right ascending colon was severely impacted with loose faeces, the transverse colon contained a hard mass (faecolith) just at the pelvic flexure junction. There was a rupture of the intestine caudal to this region towards the margin of the colorectal flexure (A). The peritoneal fluid was clear. The caecum was noted to be markedly distended with gas. Following decompression of the caecum, exploration of the abdominal cavity revealed small colon impaction by a large faecolith (Plate E and F). The affected intestinal wall was hyperaemic and devitalised. The bowel proximal to the obstruction was distended due to gas and fluid accumulation. The mass was so hard and dry that kneading or softening would damage the intestinal wall.

The hard mass was dark, of stony consistency and oval-shaped weighing: 1.4kg and measuring 17 inches in length. The focus of rupture in the colon was dark red ('devitalised'). The mucosal surface of the transverse colon (8-12cm in length) was dark red (congested) and had three (3) elevated areas of about 1-2cm diameter (button ulcers). The abdominal cavity was strewn with a moderate amount of faecal material. There were both capsular and cortical haemorrhages on the kidneys. The capsule was firm and adherent to the cortex. There was also marked congestion and haemorrhages of the cerebral meninges of the brain.

Summary of gross findings include Anaemia (mild), Hydrothorax and hydroperitoneum (moderate), Pulmonary edema (moderate), Generalized visceral haemorrhage (petechial – ecchymotic: lungs, liver, spleen, pericardium and epicardium, intestine; kidney; brain suffusive: endocardium), Hepatitis fibrinous acute, Intestinal foreign body and rupture and Enteritis ulcerative.

Plates A-F showing. (A) Donkey A just before postmortem. (B) Donkey B exhibiting signs of depression and pain. (C) The faecolith removed from the colon in Donkey A. (D) The faecolith removed from the colon in Donkey B. (E) Shape and texture of Faecolith from Donkey (A). (F) Shape and texture of Faecolith from Donkey (B).

3.DISCUSSION

Impaction colics are commonly encountered in equine practice (Byars 1993, Hughes et al 2003). Sites of impaction can include the large colon (particularly at the pelvic flexure or just proximal to the transverse colon), stomach, small intestine, caecum, small colon, and less commonly, the rectum (Byars 1993; Dabareiner and White 1995). In mature horses the most common cause of impactions of the small colon is faecalith (Smith 2002). Impaction with faecalith is not very common in donkeys but has been reported in horses and foals (McClure 1992; Gilroy and Bellamy, 1998). This may be the first report in this environment. Nonetheless, faecolith impaction of the small colon is reported frequently in miniature breed foals (Ragle et al 1989, Bernard 2003). The high prevalence of descending colon faecoliths in miniature breeds has been suggested to result from a variety of factors, including low water intake, poor quality roughage, inadequate mastication, dental disease, foreign body ingestion, and small colon stasis or dysfunction (Dabareiner,and White 1995; Hughes et al 2003).

Some predisposing factors such as low water intake have been noted in this report. Clinical and laboratory findings associated with impaction are variable, depending on the location, severity, and the duration of impaction. The clinical signs of lack of faecal production, sweating, inappetence, and reduced borborygmi were recorded at one time or the other. Especially as it is relieved with supportive management and reoccurs. The abdominal pain or colicky stance may be due to excessively distended intestine caused by the faecolith, gas distension and tension on the mesentery,

intestinal incarceration or twisting, and inflammation (enteritis or peritonitis). The rupture observed in the Donkey A may be as a result of the ensuing impacted pressure. Following intestinal distension both by gas, fluid, or ingesta, stretchsensitive receptors located within the intestinal wall will be stimulated and transmit pain impulses to the brain (Radostits et al 2007). The clinical signs of reduced faecal output, abdominal pain, and colic, depend on whether the obstruction is partial or complete. Complete obstructions will cause acute clinical signs due to the buildup of gas and ingesta proximal to the obstruction. Faecoliths more commonly cause partial obstructions; signs are milder and often intermittent.

Gastrointestinal sounds may be diminished or may increase with each episode of colic (Byars 1993). The duration of the colic episode, severity of the pain, the response to treatment, deworming history, any changes in diet, and cardiovascular status are important information for an appropriate diagnostic approach. Assessment of the cardiopulmonary system includes evaluation of the mucous membrane (colour, moistness, and capillary refill time CRT), heart rate, and hydration status. High heart rate, prolonged CRT, and discoloration of the mucous membrane reflect the degree of circulatory shock (Radostits et al 2007). Peritoneal fluid analysis showed mild elevation of total protein without any changes in the colour of fluid. A correlation between elevated peritoneal total protein and intestinal strangulating obstructions has been reported (Bernard 1992).

Rectal palpation may detect faecoliths in some cases depending on their size and location but which was not the case here. In other cases diagnosis may be made at surgery. Some faecoliths are small enough to be passed normally by the horse, however, the size of the faecolith in both donkeys in these cases are outstanding. Season, age and dental disease have been described as risks factors of colic in donkeys (Cox *et al.,* 2007). Inappropriate diet and dental problems may predispose to faecoliths. Miniature horses are most commonly affected. The condition can occur at any time of year, but is more prevalent in late autumn when the pasture is coarse and water intake is reduced due to cooler temperatures (Thiemann and Sullivan 2019).

With the exception of miniature breed foals, faecalith impaction of the small colon is an uncommon finding in foals (Bernard 1993). The clinical signs which be intermittent, duration and temperament of the donkey, nature of feed, water intake and/or teeth problem may serve as indicators of faecolith diagnosis in future recurrence. For faecoliths causing significant clinical signs surgical removal may be carried out under general anaesthesia. The colonic contents and the faecolith may be removed by a pelvic flexure enterotomy.

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