

A Case of the Large Colon Impaction in an Adult Donkey

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성숙한 당나귀의 큰장록창자 폐색 증례

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Abstract

The purpose of this report is to describe the diagnosed case of a large colonic impaction in an adult donkey. An adult female donkey (*Equus africanus asinus*; 6-years-old) was admitted to the Equine Hospital of Jeju Race Park with signs of anorexia, which had started 1 day previously. Clinical examination revealed: weak gut sounds, dehydration, and severe abdominal distension, but normal respiratory and heart rates and no signs of pain. Transrectal palpation identified an impaction in the colon. The patient was treated with nasogastric siphonage, fluid therapy, and nonsteroidal anti-inflammatory drugs. Over the course of a day, her condition worsened; she started trembling, could not stand, and 2 hours later she died. Upon necropsy, a vast amount of ingesta was found in the large colon, particularly in the left ventral colon. The cecum and small colon were normal. Eleven days prior to presentation, the stable management and diet of the donkey had changed. We suspect that the change of feed, reduced water consumption, and lack of exercise precipitated the illness. However, the exact cause of the sudden death of the donkey requires further investigation.

Key words : Adult donkey (*Equus africanus asinus*), Colic, Large colon, impaction

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Introduction

Colic is a clinical condition of serious concern affecting the welfare and survival of animals. Epidemiological research has demonstrated that colic is complex and some studies have produced conflicting results about the impact of individual risk factors(Crane and Medical, 1997). In some equine populations it is the most common cause of death(Archer and Proudman, 2006). The cause of most large colon impactions is unknown(White and Dabareiner, 1997). This disorder is the second most common reported cause of colic in horses, and is the most frequent type of simple obstruction(Hardy, 2008). Impactions are thought to be caused by overfeeding, especially of bulky feed containing an excess of indigestible residue: old, dry, hard hay, or stalks; deficiency of secretions in the intestinal track(Cohen, 2003). The proportion of impactions diagnosed in this donkey population is much higher than the 5-12% that has been reported for horses(Proudman, 1991). However little is known about risk factors for this condition in the donkey, although many papers have been published on colic cases in horses.

Case

To our knowledge, there is no data reporting clinical cases of donkey's colic in Korea. We report the case of an adult female donkey(*Equus africanus asinus* ; 6-years-old) that was admitted to the Equine Hospital at Jeju Race Park with signs of anorexia on 24th January, 2011. Clinical examination revealed weak gutsound, dehydration, and severe abdominal distension, but a normal respiratory rate(20breaths/min) and heart rate(50beats /min), and no signs of pain.

Transrectal palpation revealed an impaction, located in the colon. The patient was treated with nasogastric siphonage, 12 L of fluid therapy (Safe-Flex Hartmann's solution®, CJ, Korea), and 6 mL non steroidal anti-inflammatory drugs(Finadyne®, MSDSante Animale, France). The donkey's vital signs did not change from the first diagnosis to the last check-up. Over the course of the day, her condition worsened; she started trembling and suddenly could not stand. About 2 hours later, she died.

Post-mortem examination revealed severe distension of the whole large colon, but the remainder of the gross necropsy results were unremarkable(Fig. 1). Moreover, vast amounts of ingesta, such as digested hays and grains, were present throughout the large colon, particularly the left ventral colon, while the cecum and small colon were normal(Fig. 2). Thus, the site of impaction was the left ventral colon.

Eleven days before presentation, the stable management and diet of the donkey changed

when she was transferred from another farm. The former diet formulation was unknown. However, the donkey had eaten grains and hays of good quality at the new farm. The donkey was kept in a stable for a while because of cold weather. She drank about 10 L of water a day before the bad weather started, but as it got colder, she drank only around 4 L. In addition, there was no pasture, and thus she did not take part in any exercise, so that gut movement, and consequently intestinal health, decreased. It is assumed that the change of feed, reduced water consumption, and lack of exercise precipitated her illness.



Fig. 1. Severe distension of whole large colons in the donkey. The left ventral colon was enlarged especially

- 1. Right ventral colon; 2. Sternal flexure; 3. Left ventral colon; 4. Pelvic flexure;
- 5. Left dorsal colon; 6. Diaphragmatic flexure; 7. Right dorsal colon; 8. Left lung;
- 9. Stomach



Fig. 2. The large colon was filled with a lot of ingesta (hays and grains)

- 1. Lung; 2. Great omentum; 3. Small intestine; 4. Large colon; 5. Small colon

The donkey did not show overt signs of abdominal pain; the impaction might not have been identified until the animal was in the terminal stage. The authors suspect that the cause of death was obstructive shock due to the impacted lumen of the large intestine.

Discussion

Large colon impactions may be promoted by reduced water intake, poor quality feed, limited exercise, poor dentition, and colonic motility alterations. Cold weather may reduce water consumption(Hanson, 2002). Despite the magnitude of the problem of equine colic, relatively little is known about factors that cause it. Age, sex, and breed have been associated with increased risk of colic. In farm management factors, dietary factors can predispose to colic. However, epidemiological studies have yielded conflicting results. Hosing practices contribute to colic. Changes in stabling, particularly a change from being kept on pasture to being kept in a stall, predispose to colic(Cohen, 2002). In donkeys, the most common medical problems were hoof, dermal and oral problems, and at least 45% had at least one dental problem(Cox *et al.*, 2010). However, this donkey's dental condition was normal.

While research has aimed to identify risk factors for colic in horses little is known about the incidence of the disease, or specific risk factors in donkeys which differ in many respects to other equids, for example in physiology, behavior and management(Crane, 1997). In donkeys, management factors that increased the risk of impaction included feeding of concentrates, limited access to pasture and increasing number of carers. Furthermore, the study has also identified a number of variables that may be targeted to reduce the incidence of impaction colic in this donkey population, such as modification of concentrate feeding practices and pasture access(Cox *et al.*, 2009).

In horses, large colon impactions occur at three sites: the pelvic flexure, right dorsal colon and transverse colon (Eades and Waguespack, 2006; White and Dabareiner, 1997). There are also sites of origin of retropulsive contractions, which retain ingesta for microbial digestion. These normal contractile patterns may contribute to worsening of impactions(Eades and Waguespack, 2006). However, in this case, the impaction site was in the left ventral colon.

Diagnosis of colic in donkeys can be more difficult than in horses because donkeys show few overt signs of abdominal pain and colic may not be identified until the donkey is in the terminal stages of the disease(Duffield *et al.*, 2002). A donkey with impaction may never show typical colic signs but merely is a little depressed and has reduced appetite(Burton *et al.*, 2008). If the impaction remains unresolved, the horse becomes uncontrollably painful, or extensive gas distension of the colon occur(Blikslager and Jones, 2004). In this case, the

patient did not show signs of abdominal pain.

The duration of colic on donkeys appears to longer than that in horses, where single episodes have been recorded to last for hours rather than days. For example, studies have noted that few horses(19%) show colic signs for more than 12 hours(Proudman, 1991), while others have recorded a maximum of 24 hours(Traub-Dargatz *et al.*, 1999). However large colon impactions tend to be of longer duration. A study of 147 cases of large colon impaction in horses found that the mean duration of abdominal pain prior to referral was 32 hours and the duration of medical treatment required to solve the impaction was a mean of 2 days(range 1 to 6 days) (Dabareiner and White, 1995).

Large intestinal distension secondary to obstruction is a common cause of abdominal pain in horses(McIlwraith, 1984). Large colon impaction without signs of pain from the first to the terminal stage, such as exemplified by this case, is a subject for further research.

Various equids, such as horses, ponies, and donkeys, are increasingly used for riding therapy for disabled people in Korea. Yang *et al.* reported that large colon rupture was caused by sand impaction in a horse(Yang *et al.*, 2005). However, no such case of colic has been described in donkeys. The exact cause of sudden death in this donkey should be further studied, in order to further the clinical veterinary knowledge of equids in general, and for the development of the equine industry.

Acknowledgements

We would like to thank veterinarians at Equine hospital of Jeju Race Park. All data of this study were used under permission of equine hospital of Korea Racing Authority.

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성숙한 당나귀의 큰잘록창자 폐색 증례

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요약

본 연구의 목적은 성숙한 당나귀의 큰잘록 창자 폐색 증례를 진단하여 보고하고자 한다. 당나귀(*Equus africanus asinus*; 암, 6세) 1마리가 제주경마공원 동물병원에 전날부터 시작된 식욕부진 증상으로 내원하였다. 장음소실, 탈수, 심한 복강 확장 등의 증상을 확인하였으나 호흡수 및 심박수는 정상이었고, 복통 증상은 없었다. 직장검사에서 폐색된 부분이 잘록 창자임을 확인하였다. 위세척, 수액요법 및 비스테로이드 계열의 진통제를 투여하였으나 다음날 새벽 갑자기 몸을 떨며 기립곤란과 같이 신체상태가 악화되기 시작한지 2시간 만에 폐사하였다. 부검에서 특히 왼배쪽 잘록 창자와 같은 큰잘록 창자에서 다량의 식괴를 발견하였고, 막창자와 곧창자는 정상이었다. 당나귀는 내원하기 11일 전에 새로 입사해서 사양 관리 체계가 바뀌었다. 사료변경, 수분섭취 감소, 운동부족 등이 질병을 유발하였을 것으로 생각된다. 그러나 당나귀의 정확한 급사원인은 더 연구해야 할 과제로 남는다.

주요어 : 당나귀(*Equus africanus asinus*), 산통, 큰잘록창자, 폐색