

Congenital Recto Vaginal Fistula with Atresia Ani in a Heifer: A Case Report

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SUMMARY

A crossbred Holstein × Yerli kara (Local breed) heifer, 9 month old age was admitted to the gynecology clinic of Dicle University Veterinarian Faculty, with congenital recto vaginal fistula and atresia ani. This was clinically identified as a congenital anomaly. Recto vaginal fistula and atresia ani were successfully corrected by surgical excisions.

Key Words

Crossbred Heifer, Congenital Defect, Recto-Vaginal Fistula, Atresia Ani

Bir Düvede Doğmasal Atresia Ani ile Birlikte Rekto Vajinal Fistül Olgusu

ÖZET

Atresia ani ve rekto vajinal fistül şikayeti ile Dicle Üniversitesi Veteriner Fakültesi jinekoloji kliniğine 9 aylık siyah-Beyaz alaca x Yerli Kara melezi (Yerli ırk) bir düve getirildi. Bunun doğmasal bir anomali olduğu tespit edildi. Rekto vajinal fistül ve atresia ani cerrahi olarak başarılı bir şekilde tedavi edildi.

Anahtar Kelimeler

Melez Düve, Doğmasal Anomali, Rekto-Vajinal Fistül, Atresia Ani

INTRODUCTION

Congenital defects, abnormalities of structure or function present at birth, may be caused by genetic or environmental factors, or a combination of both; in many cases, the causes are unknown. The most common bovine environmental teratogens include toxic plants consumed by the dam and maternal-fetal viral infections during gestation. Congenital anomalies have been estimated to occur in 0.2%–5% of calves. In a cattle survey, the percentages for the occurrence of congenital defects were reported as the musculoskeletal system: 24%, the respiratory and alimentary tracts: 13%, the central nervous system: 22%, the abdominal wall: 9%, the urogenital system: 4%, the cardiovascular system: 3%, the skin: 2%, and others: 4%. Congenital malformation sometimes leads to perinatal mortality, and it may also decrease maternal productivity and reduce the value of the defective neonates. Severe defects results in abortion of the calf or a return to service of the calf and cow (Bademkiran et al. 2006; Belge et al.2000; Ghanem et al.2004; Ghanem et al. 2005; Kılıç and Sarierler 2004; Magda and Youssef 2007; Newman et al.1999; Noh et al.2003; Rahman et al.2006).

Developmental defects may be lethal, semi-lethal, or compatible with life, causing aesthetic defects or having no effect on the animal. Susceptibility to agents that affect development varies with fetal development, but in general decreases with gestational age. Before Day 14 of gestation in cattle (period of pre-attachment), the zygote or embryo is resistant to agents that can cause congenital malformations (teratogens), but is susceptible to genetic mutations and abnormalities of chromosome numbers or structure (chromosomal aberrations). During the embryonic period (Days 14–42), the embryo is highly

susceptible to teratogens, but this decreases with embryonic age, as the critical periods for the formation of various organs are passed. The fetus (Day 42) becomes increasingly resistant to teratogenic agents with age, except for late differentiating structures, e.g. cerebellum, palate, and urogenital system. The majority of genetic defects in cattle are inherited as recessives. Approximately 1 in 10 animals carries a lethal or sub-lethal allele. Disorders of the external genitalia are of particular concern, due to the impact of these deformities on future generations. Atresia ani develops when a dorsal part of the cloacal plate fails to form. It has been reported as a possible genetic defect in Swedish Highland Cattle, Holsteins, and other breeds, but the pattern of the inheritance in cattle is uncertain. Atresia ani is the most common intestinal defect in sheep and is believed to be due to an autosomal recessive gene. In a series of 64 cases of atresia ani in sheep, 42 (62%) were associated with defects of other body systems, especially the urogenital and musculoskeletal systems. (Ghanem et al. 2004; Kılıç and Sarierler 2004; Magda and Youssef 2007; Newman et al.1999; Rahman et al. 2006; Bademkiran 2008; Loynachan et al. 2006).

Four major types of intestinal atresia have been described. Type I atresia is a mucosal blockage within the intestinal lumen. In animals with type II atresia, the proximal segment terminates in a blind end and the distal segment begins similarly with 2 ends being joined by a fibrous cord devoid of lumen. Type IIIa atresia is similar to type II except that the proximal and the distal blind ends are completely separated and there is a mesenteric defect corresponding to the missing segment of intestine. Animals with type IIIb atresia have a coiled distal segment of intestine. Type IV atresia involves multiple sites of

atresia (Kılıç and Sarierler 2004; Rahal et al. 2007).

Congenital rectovaginal fistula is characterized by the communication between the dorsal wall of the vagina and the ventral portion of the rectum, so that the vulva functions as a common opening to the urogenital and gastrointestinal tracts. Usually, the abnormality is associated with type II atresia ani, in which the rectum ends as a blind pouch immediately cranial to the imperforated anus. Clinical signs include passage of feces through the vulva, vulvar irritation, tenesmus, cystitis, and megacolon, among others. Recto-vaginal defects may cause the pneumovagina results from stretched, ruptured, deformed and horizontal vulva which may introduce fecal material, urine and air into the vagina (particularly in older cows) leading to vaginitis, cervicitis, endometritis, failure of conception and repeated breeding (Cox 1987; Frank 1981; Ricketts 1991; Roberts 1986).

Pooling of the urine in the cranial portion of the vagina (urovagina) often causes infertility in cows (Gilbert 1984; Jean 1988). The urine and vaginal debris provoke vaginitis, cervicitis and cause endometritis if they enter the uterus during estrus. Diagnosis is based on history, clinical signs, and physical examination. Radiographic examination with contrast medium infused through the vagina or fistula may be useful for determining the position of the fistula and terminal rectum. Two surgical techniques are frequently used in the treatment of rectovaginal fistula and atresia ani: in one the fistula is isolated, transected, and the rectum and vulvae defects are closed separately, followed by reconstruction of the anus; in the other, the rectum is transected cranial to the fistulous opening, the affected segment is removed, and the terminal part of the rectum is sutured to the anus. Closing the rectovaginal fistula by numerous purse-string sutures along its length and the use of plastic adhesive in the treatment of rectovaginal fistula induced experimentally have also been reported. (Rahal et al.2007; Farhoodi et al. 2000; Mahler and Williams 2005)

A crossbred Holstein X Yerli kara (Local breed) heifer, 9 month old age to brought to Dicle university, the animal hospital of veterinary faculty in consideration of lack growing problems. We observed the atresia ani (Figure-1) and recto vaginal fistul defects (Figure-2) on this animal. Besides, blood samples were taken from animal before 15 minute and one month after surgical operation for hematologic and biochemical analysis.



Figure 1. Appearance before surgery atresia ani (yellow arrow) and showing incision line (blue arrows).

Şekil 1. Operasyon öncesi atresia ani (Sarı ok) ve ensizyon hattının (Mavi oklar) görünümü



Figure 2. The hole of excreted feces in the vagina. (Violet arrows)

Şekil 2. Dışkıının vaginaya geçtiği delik



Figure 3. Appearance immediately postoperative after correction of rectovaginal fistula and atresia ani.

Şekil 3. Atresia ani ve rekto vaginal fistülün operasyonla düzeltilmesinden hemen sonraki hali

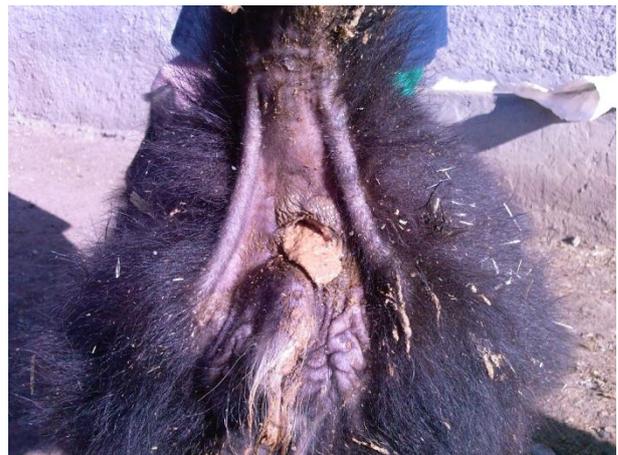


Figure 4. After correction of rectovaginal fistula and atresia ani. Normal area 1 month postoperatively.

Şekil 4. Bölgenin operasyondan bir ay sonraki hali.

As a result of the medical examination, proximate 1-1.5 cm size fistul was found within 5 cm in the side of the left dorso-lateral of vulvo-vaginal line (figure-2). Continual flowing of feces in fistula hole and the inflammation of vagina were observed as well.

As a result of discussion the method which suggested by Rahal (2007) were used. According to this method epidural anesthesia were applied and artificial anus opened on rectum (Figure-3 and 4).

Usual blood biochemical and hematological variables were observed in the beginning and the end of the surgical operation (Table-1, Table-2). The increase was observed in serum albumin, glucose, calcium, ferritin, total protein and phosphor concentrations (Table.1). Body weight gain and serum biochemical variables return to the usual values consequently turning back of the defecation to normally. These results have been hypothesized as the cause of the normal defecation function and passing irritation on vaginal mucous. We didn't find any literature about biochemical study which has done on atresi and recto vaginal fistula of heifer.

Table 1. Biochemical results

Tablo 1. Biyokimyasal sonuçlar

Parameters	Before Operation	1 Month After Operation
Albumin	2.5	3.2
Calcium	8	9.2
Glucose	52	64
GOT	148	103
GPT	10	16
Fe	56	98
LDH	1500	1120
Mg	2.2	2.0
P	4.3	5.2
Tp	5.4	6.5
Alp	252	99

Table 2. Hematological results

Tablo 2. Hematolojik sonuçlar

Blood variables	Before Operation	1 Month After Operation
WBC	13.30	11.20
NE	3.91	3.5
LY	9.11	7.48
MO	0.23	0.20
EO	0.05	0.02
BA	00	00
RBC	10.81	9.1
Hb	11.9	12.2
HCT	35.7	38.5
MCV	33.0	39.1
MCH	11.4	12.6
RDW	30.3	26
PLT	458	714
PDW	4.0	4.5

DISCUSSION

Rectovaginal fistula is considered an embryologic failure of the urorectal septum to separate the cloaca into urethrovesical and rectal segments. Although there are references of no breed predisposition in dogs presenting this disease. In a retrospective study of dogs with atresia ani, an increased prevalence in several breeds, including poodles and Boston terriers was observed (Rahal et al. 2007, Johnson et al.1980). However, we didn't find any study has been done on the strain factor on these parameters determined in our study.

Kilic et al. (2004) state that the history and physical examination findings in calves with intestinal atresia frequently are similar. Most affected calves initially will stand and suckle normally after birth. The time to onset of clinical signs of disease may vary from 1 to 6 days, calves with lesions in the proximal segments or with atresia ani may be affected slightly earlier. The principal clinical signs of disease are depression, anorexia, and abdominal distention. Frequently, the owner has not seen the calf pass meconium or feces. Thick mucus may be passed through the anus if it is patent or through the vagina in heifer's contaminant rectovaginal fistula. In calves with atresia ani, the owners may have noticed the defect when attempting to administer an enema or while obtaining a rectal temperature reading. For all that the fact of the atresia-ani and recto vaginal fistula occurs at the same time and also defecation may cause disappears these lesions. Because of disappearing of these facts the lesions of animal have been determined by us after checking complaints such as lack of body weight gain. Since the clinical signs and physical examination findings were sufficient to establish the diagnosis, radiographic studies were not necessary to confirm the disease. However, radiographs are considered important to determine the position of the fistula and to differentiate that beforehand the 4 types of congenital atresia ani (Rahal et al. 2007). We didn't have facility for radiography therefore we couldn't check analysis of mega colon.

Some authors (Newman et al.1999; Johnson et al.1980; Prieur and Dargatz 1984) state that failure of the anal membrane to perforate, failure of the bowel to canalize, failure of the proctodeum to invaginate, and interruption of the blood supply to the anus or to the intestine during embryonic development can produce atresia ani or intestinal atresia, respectively. Atresia ani may develop when the dorsal part of the cloacal plate fails to form, and in females this is occasionally accompanied by a recto vaginal fistula. The resulting fistula connects the dorsal wall of the vagina with the ventral portion of the terminal rectum and provides a path for defecation. Defecation is inhibited when atresia of the vulva accompanies this lesion. Atresia of the vulva has not been previously reported in calves. Observing of the atresia and recto vaginal fistula results confirm to previous studies.

A genetic basis has been documented for some cases of atresia ani, but the specific cause in sporadic cases in domestic species and humans is not always known (Newman et al.1999; Johnson et al.1980). The heritability of intestinal atresia is controversial and poorly understood. Atresia ani has been reported to be a heritable condition in pigs and calves (Kilic et al. 2004). However, the own of heifer reported that no dysfunctions was observed in its own parents.

Some authors (Belge et al.2000; Noh et al.2003; Johnson et al.1983; Leipold 1986) reported that the most anomalies of digestion system were observed as atresia-ani and et-recti in calves. Besides, the anomalies of urinary system such as renal agenesis, polycystic kidney and skeleton system such as coccygeal or sacral vertebral agenesis have been observed at the same time in calves. But, in our study we observed only atresia-ani and recto-vaginal fistula lesions.

As a result, the causes of these defects according as genetic and environmental factors have not been determined yet. However, we consider that the lesions of this fact may be reducing by surgery operation and also this surgery

operation may improve body weight gain and reduce economic losses caused by the fact.

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