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Case Report

Bladder Eversion Caused by Chronic Cystitis in an Arabian Racehorse: A Case Report

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ABSTRACT

Bladder eversion is a rare condition and may occur in mares as a result of excessive straining during pregnancy or in the postpartum period. In the present case, bladder eversion was caused by chronic cystitis in a nonpregnant mare. An Arabian racehorse (mare, 3 years old) was admitted to The Racehorse Hospital of the Turkish Jockey Club with a history of lumbar pain, excessive straining, and frequently assuming the urination position. Physical examination revealed the presence of tenesmus, stranguria, passing of small amounts of urine, and a visible mucosal structure at the ventral vulvar commissure during tenesmus. Laboratory findings revealed leucocytosis, increased urine pH, proteinuria, pyuria, and hematuria. *Streptococcus equi* subsp. *zooepidemicus* and *Escherichia coli* were isolated and identified in urine culture. Transrectal ultrasonography revealed thickening of the bladder wall and prolapse of the bladder corpus into the bladder. In the cystoscopic examination, performed following bladder reduction, severe hyperemia, erosion, and ulcers were determined in the bladder mucosa. Chronic cystitis was treated using antibiotics, based on urine culture test results, together with steroids and nonsteroidal anti-inflammatory drugs. Twenty-four hours after the start of treatment, the severity of straining was observed to have decreased, ceasing completely on Day 4, and the bladder returned to its normal position.

In this case presentation, bladder eversion caused by chronic bacterial cystitis, diagnosed by clinical, laboratory, ultrasonography, and cystoscopy findings, was evaluated. It was observed that severe inflammation, pain, and straining caused by chronic bacterial cystitis resulted in bladder eversion and that the eversion was corrected with effective medical treatment of the chronic bacterial cystitis.

1. Introduction

Partial or total eversion of the bladder [1] through the urethra into the vagina is considered a rare condition occurring in mares [2-7] and cattle [8-12]. The main reasons for bladder eversion have been reported as severe straining/difficulty [6-8,10,11,13] in late pregnancy or during the early postpartum period, an increase in intra-abdominal pressure [9,12,14], a short and wide urethra in mares [13], and predisposition to eversion due to hypocalcemia.

In the case of bladder eversion, the urinary bladder passes through the urethra and becomes visible through the vulva. The part that is visible in the vulva is the mucosal surface of the bladder. In the case of bladder prolapse, the urinary bladder becomes visible after it protrudes through the ruptured wall of the vagina. Protrusion of the bladder may be total or partial. The visible protruding section is the serosal surface of the bladder and is bright red in color. The bladder never totally drains in either case and may rupture due to pressure [1].

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2. Case Presentation

The animal in this case was a 3-year-old Arabian mare racehorse brought to the Turkish Jockey Club Racehorse Hospital with a complaint of pain in the lumbar region, continuous straining, and frequently assuming the urination position. It was learned that the horse was given the combination of amoxicillin/clavulanic acid for 10 days prior to presentation but that the response was worse.

Physical examination of the racehorse revealed tenesmus, difficulty in passing urine, a small amount of urination during tenesmus, and a mucosal structure protruding from the vulva. During examination of the vagina, a red-colored, balloon-shaped mucosal structure was identified in the vagina (Fig.1). This mucosal structure was seen to retract when pushed manually and reappear during straining. No abnormalities (such as lacerations) were observed on the walls of the vagina.

A complete blood cell count revealed severe leucocytosis (14.3 × K/uL), neutrophilia (11.6 × K/uL neutrophils, 81.2%), and lymphopenia (2.29 × K/uL, 16.1%). Results of urine analysis (urine was obtained by urinary catheter after the bladder reduction) were as follows: cloudy yellow urine, pH of 8.0, specific gravity of 1.025, proteinuria 3+, pyuria 3+, and hematuria 3+.

Streptococcus equi subsp. *zooepidemicus* and *Escherichia coli* were isolated and identified in urine culture. Antibiogram test results (Oxoid, England) revealed antibiotic sensitivity as follows: ampicillin 4+, ampicillin sulbactam 4+, amoxicillin 4+, amoxicillin clavulanic acid 4+, ceftiofur 4+, gentamicin 4+, enrofloxacin 4+, oxytetracycline 4+, penicillin G 4+, and rifampicin 4+; and antibiotics with medium sensitivity as follows: amikacin 3+, neomycin 3+, trimethoprim-sulfa 3+, kanamycin 2+, and streptomycin 2+.

In the transrectal ultrasonographic examination of the bladder, it was observed that the bladder wall was greatly thickened and the bladder corpus had prolapsed into the bladder and extended up to the urethra outlet (Fig. 2).

Following bladder reduction, endoscopic examination of the urinary bladder was performed. Severe hyperemia, erosions, and ulcers were found in the bladder mucosa. When the bladder was inflated with air, it was seen that the bladder failed to expand totally and that during straining, the cranial wall of the bladder prolapsed into the bladder. A small amount of urine flow was observed (Fig. 3).

In light of clinical, laboratory, ultrasonographic, and endoscopic findings, chronic bacterial cystitis and bladder eversion was diagnosed in the racehorse. In the ultrasonographic and endoscopic examinations, thickening of the bladder wall and mucosal changes (hyperemia, ulcer) and identification of microorganisms in urinalysis and urine culture was evaluated as chronic bacterial cystitis, whereas, prolapse of the bladder during straining and visualization of the bladder mucosa through the vulva was assessed as urinary bladder eversion.

Treatment of cystitis was based on urine culture results. Antibiotics (oxytetracycline HCL, 5 mg/kg of body weight [BW], intravenous [IV], twice daily, for 15 days), steroid anti-inflammatory drugs (dexamethasone, 25 mg, IV, once per day for 3 days), and non-steroidal anti-inflammatory drugs (flunixin meglumine, 2.2 mg/kg BW, IV, for 4 days) were given.

The severity of straining decreased 24 hours after treatment was started, after which it ceased completely on Day 4 and the bladder returned to its normal position. At the end of the treatment (15 days), urine findings had returned to normal, and the bladder mucosa was seen to have healed to a large extent.

3. Discussion and Conclusions

The cause of bladder eversion has been reported to be severe straining [5-8,10,11,13] in late pregnancy or early postpartum period and an increase in intra-abdominal pressure [4,9,12,14]. Most cases are associated with the pregnancy period and parturition [5-7]. This case originated from chronic bacterial cystitis observed in a nonpregnant mare. The inflammatory stimulation and straining that occurred in chronic cystitis resulted in eversion.

Bladder eversion is among the rare conditions seen in mares [2-7]. In clinical assessments, differential diagnosis of bladder eversion and prolapse is important in the guidance of treatment. Eversion is the case when the bladder passes through the urethra, turning inside out, and the bladder mucosa becomes visible through the vulva [1]. Prolapse, on the other hand, is the visualization of the peritoneal surface of the bladder (not its inner surface) through the vulva [13,15]. Bladder eversion was diagnosed based on the fact that the formation visible through the

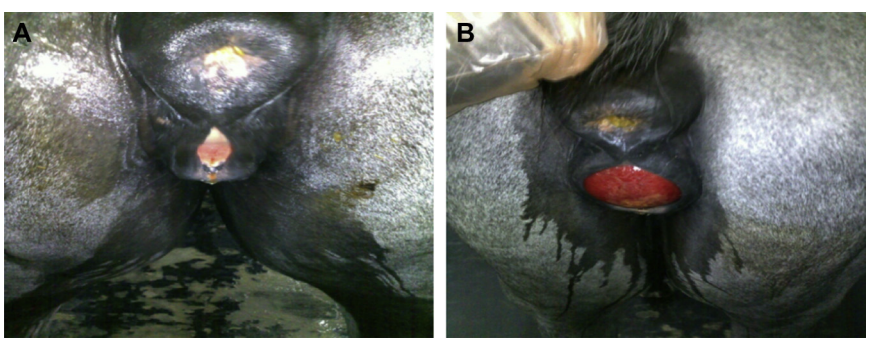

Fig. 1. Tenesmus (**A**); bladder eversion, the appearance of a mucosal structure protruding from the vulva (**B**).