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Dysuria in a Sardinian Ram with Glans Penis Traumatic Injury

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Abstract

Signs of dysuria in rams are usually associated with urethral obstruction caused by calculi, especially in castrated males, while penile trauma is rarely reported as a cause of dysuria. In this paper, a case of a 4-year-old, 65 kg bodyweight, Sardinian intact ram referred to the Teaching Veterinary Hospital (OVUD) at the Department of Veterinary Medicine - University of Perugia, Italy, with a 1-month history of dysuria is reported. At the moment of referral, the animal showed increased heart and respiratory rate, normal rectal temperature, urine dropping, straining and false kyphosis. Ultrasound investigation revealed heterogeneous hypoechoic tissue surrounded by a hyperechoic capsule in the apical end of the penis, normal testicular parenchyma, and distended urinary bladder. After sedation, the protruded glans penis was necrotic at inspection. Cystography showed no alterations in the urinary tract, while catheterization was unsuccessful; after the amputation of the urethral process, involuntary urine loss appeared. The ram was hospitalized and antimicrobial, anti-inflammatory and sustain therapy was administered for 5 days, associated with daily preputial flushing with iodine solution. Two injections of neostigmine metilsulphate, 1 mg SC, 24 hours apart, were administered to increase the bladder tone. The animal slowly improved both the general condition and the voluntary urine emission. After coming back to the farm, the ram observed a further period of sexual rest. To our knowledge, there are no reported cases of iatrogenic penile trauma and subsequent necrosis and strangury in small ruminants. Since necrosis of the glans penis was noticed, caution should be used in formulating prognosis concerning the future mating ability of the animal, based on the extension of the necrotic process.

Keywords

Dysuria; Ram; Glans penis; Injury

Introduction

Dysuria and stranguria in rams are usually associated to urethral obstruction caused by lythiasis, especially in castrated males, or to urinary tract infection even if this second condition is less common [1]. Also penile trauma is seldom reported in small ruminants. In this paper a case of dysuria and stranguria in a 4-year old intact Sardinian ram with one-month history of illness is reported.

Case Description

A 4-year-old, 65 kg bodyweight, Sardinian intact ram was referred in September 2017 to the Teaching Veterinary Hospital (OVUD) at the Department of Veterinary Medicine - University of Perugia, Italy, with a 1-month history of dysuria. The ram belonged to a sheep farm, accounting for 200 adult heads in Viterbo province, Lazio Region, Italy; in that farm, genetic selection for scrapie resistance, milk production and morphology were applied. The owner referred that, initially, a noticeable swelling immediately cranial to the scrotum was identified and the ram was firstly visited by a practitioner who suspected an urethral obstruction by an intra luminal calculi; he tried to catheterize, unsuccessfully, the urethra and treated him with an association of antibiotics and anti-inflammatory drugs two weeks before (Flunixinemeglumine, 100 mg IV, SID for two days and Ceftiofur, 50 mg IM, SID for five days). The swelling improved over time, but resolution of stranguria was not achieved. Meantime, the general status of the ram got worsen as he showed hyporexia, depression,hypomotility of the rumen and weight loss. On presentation at the OVUD, the ram was fairly alert, showed bruxism and had a slightly increased heart rate (100-110beats/min) and respiratory rate (60-70 breaths/min), likely due to pain, while rectal temperature was normal(39.5°C). At physical examination, the ram showed urine dropping, straining and false kyphosis. The ram was then placed in lateral recumbence and the penis was

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partially extruded, due both to pain and local edema of preputial mucosa; the urethral process was too short and the glans penis was scarred and changed in color with a necrotic aspect (Figure 1). There was a discrete accumulation of mucopurulent secretion within the preputial lumen. Venous blood sample was collected with 14G needle and empty Vacutainer tube for biochemistry analysis (Table 1).

Biochemistry results lead us to exclude uremic syndrome; concentrations of bilirubins and LDH, which were greater than what reported by Smith et al. [1], together with hypocalcemia and hypophosphoremia, could be suggestive of increased metabolic load in liver due to anorexia and lipomobilization.

Longitudinal and cross-sectional ultrasonographic imaging, using a 5.0 MHz convex array probe, showed an heterogeneous hypoechoic tissue in the apical end of the penis (Figure 2). Testicular parenchyma and epydidimal tail appeared normal. Compared to mean dimensions reported by Braun et al. [2], urinary bladder was slightly distended, that is 15-17 cm in diameter, but no abnormal content could be identified and kidneys appearance was normal.

Based on the history, clinical signs, and ultrasonographic findings, urethral lythiasis was suspected and catheterization was retried; the animal was sedated with Diazepam, 30mg IV, put into general anesthesia with intravenous administration of propofol,300 mgIV) and preoperative antibiotics (Amoxicillin trihydrate, 450 mg IM and Enrofloxacin, 300 mg SC).

Upon glans penis protrusion, the urethral process was cut and was catetherized with a dog insemination catether (Minitube, CH 03 FR, 70cm length), which did not proceed beyond the sigmoid flexure.After urethral process exeresis, involuntary and continuous urine flow appeared. To reduce bladder distension, inguinal region was surgically prepared; briefly, the ram was positioned in lateral recumbenceand aseptically prepared in the inguinal region. Lidocaine hydrochloride 2%, for a total of 6 ml, was infiltrated locally to anesthetize the surgical site. An epidural needle, approximately 10–15cm in length and 14G was inserted and ultrasound guided through the abdominal layers to the bladder and 500ml of urines were drained; a sample was sent to the Laboratory for urinalysis (Table 2). Then, the ram was subjected to bladder contrastography by injecting 20 ml of contrast medium (Iobitridol 350 mg/ml) in bladder lumen. Then radiographic images were performed 15 minutes apart in order to evaluate urine passage through the penile urethra. No abnormalities in urinary bladder wall neither content could be found and bladder volume appeared reduced, that is 5-7 cm in diameter. The urethra appeared intact, with no restrictions, lesions or distensions, included sigmoid flexure, while no calculi could be found (Figure 3).

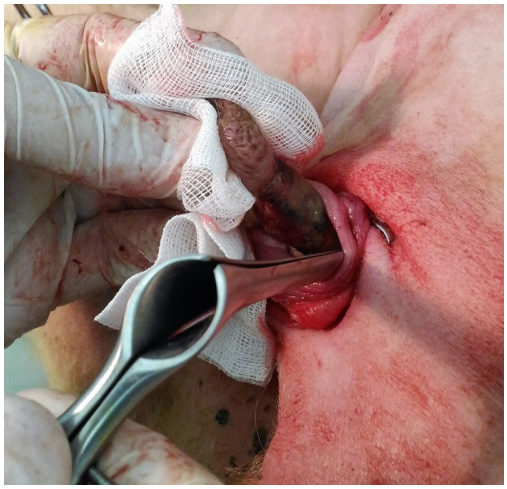

Figure 1: Necrotic aspect of the glans penis after exteriorization

Figure 2: Ultrasonographic features of the glans penis of the ram

Urinalysis and contrastography allow us to exclude the suspect of urethral calculi. The absence of crystals in urinary sediment or calculi in radiographs has been reported in rams with confirmed lythiasis [3], but in the presented case the aspect of radiography was not compatible. At this point, other suspects to explain penile necrosis and stranguria included enzootic posthitis or *pizzle-rot* disease [4] or iatrogenic penile trauma, due to catheterization attempts, secondary to a previous condition of urethral calculi. We could not exclude or confirm *pizzle-rot* disease as primary or secondary condition, as before referral to the hospital, antibiotic therapy was administered, so that a preputial swab would be likely resulted negative.

The animal was hospitalized in order to improve general condition and to investigate on the sudden involuntary urine flow. Antibiotics (Ceftiofur, 50 mg IM, SID),nonsteroidal anti-inflammatory drugs (Flunixine meglumine, 100 mg IV, SID) and vitamin complex (Stimulfos 2,5 ml SC/day) were administered for 5 days; the ram was put in a stall separated from females and rested for at least 30 d from any sexual activity. We performed once a day local antiseptic flushing of the preputial cavity with iodine solution for 15 days, with a gentle massage, to avoid the formation of adherences between the gland penis and the prepuce and in order to help eliminating necrotic tissue. Daily ultrasound examination of the abdomen revealed normal bladder (5 cm in diameter) and kidneys. Other organs, such as liver, spleen and intestinal tract, showed no abnormalities during all the hospitalization period.

Concerning the involuntary urinary dropping, we suspected that excessive and prolonged urine bladder distension could lead to nerve

Test	Result	Units
Albumin	3.45	g/dL
Total protein	6.5	g/dL
Total bilirubin	0.7	mg/dL
Direct bilirubin	0.45	mg/dL
Glucose	59	mg/dL
Urea	27	mg/dL
Creatinine	0.98	mg/dL
LDH	998	U/L
GOT	200	U/L
Calcium	9.8	mg/dL
GGT	88	U/L
Indirect bilirubin	0.25	mg/dL
GPT	22	U/L
Alkaline phosphatase	93	U/L
Creatinine kinase	111	U/L
Phosphorous	3.2	mg/dL

Table 1: Ram blood biochemistry analysis at the day of first visit at OVUD.

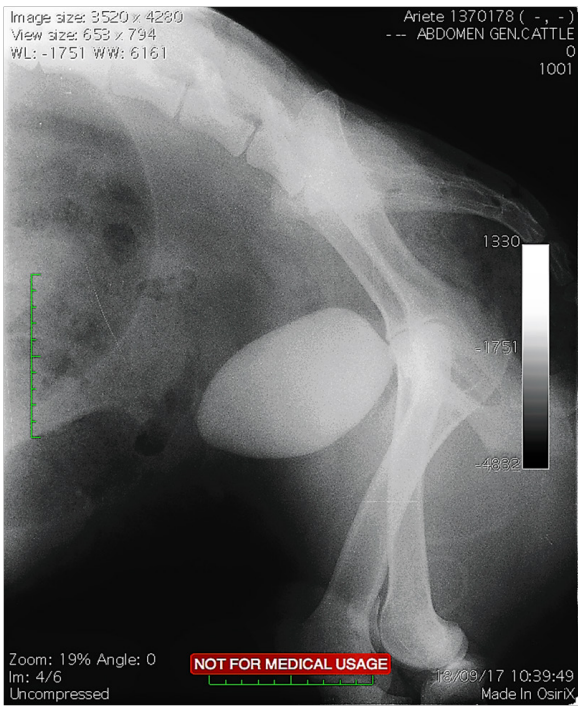

Figure 3: Urine bladder and urethra contrastography showing the penile urethra silhouette

Test	Result
Specific gravity	1023 (Refractometry)
Color	Light yellow
Aspect	Torbid
Glucose	Negative
Bilirubins	Negative
Ketones	Negative
Bloodcells	Negative
pH	8
Proteins	100 mg/dL
Urobilinogen	0.2 EU/dL
Nitrate	Negative
Leucocytes	3 p.m.f.
Epithelial cells	rare, squamous cells
Cylinder	Negative
Crystals	Negative
Spermatozoa	+++

Table 2: Results of ram urinalysis

injury, since their terminal path runs into bladder walls, even if no similar cases are reported in literature in ovine species. Ten cases of bladder paralysis concomitant to urolithiasis are reported in horses, but unlike in the ram, neuritis of *caudaequina* and other neurological/ lumbosacral vertebral deficits were found [5]. For this reason, at the end of the antibiotic and anti-inflammatory therapy, we proceeded with two injections of neostigmine metylsulphate, 1 mg SC, 24 hours apart, monitoring the animal for at least 45 minutes after injection to depict any side effects of neostigmine. No side effects were identified, while a marked improvement of urine outflow was evident 15 minutes after each injection. In the following days, the ram slightly improved the voluntary emission of urine and the continuous urine dropping interrupted progressively.

Two weeks after treatment's beginning, tenesmous and bruxism decreased, alongside with the improvement of its general health status (appetite, rumination and aptitude).

During hospitalization and after deeper history information, the owner of the ram revealed that the days before the appearance of cranial scrotal edema, a traumatic injury occurred during animal handling.

Discussion

To our knowledge, there are no reported cases of iatrogenic penile trauma and subsequent necrosis and strangury in small ruminants. Since necrosis of the glans penis was noticed, caution should be used in formulating prognosis concerning the future mating ability of the animal, based on the extension of necrotic process. We believe that antibiotic, anti-inflammatory and sustaining therapy has been beneficial in managing the recovery of the ram, while local preputial flushing with iodine solutions could prevent the formation of coalescence between glans penis and prepuce, thus maintaining the mating ability of a male.

Conflict of Interest

The authors declare that they have no conflicts of interest.

Aknowledgement

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