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Clinical Report

Diagnosis and Treatment of Vaginal Protrusion of Urinary Bladder (Cystocele) in a Dog

Rahim Alizadeh[1], Armita Modiri[2], Amir Mehrabi[3], Mohammad Shojaei[4]*

[1] Department of Surgery, Avina Vet Hospital, Tehran, Iran. [2] Department of Internal Medicine, Day Vet Clinic, Karaj, Iran. [3] Department of Internal Medicine, Avina Vet Hospital, Tehran, Iran. [4] Razi Vaccine and Serum Research institute, Agricultural Research, Education and Extension Organization (AREEO), Karaj, Iran.

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ABSTRACT

Cystocele is a chronic condition mostly seen in humans, which defines as the protrusion of the bladder into the vaginal wall. Generally, vaginal prolapse includes bladder prolapse or cystocele, rectal prolapse or rectocele, and uterus prolapse. This condition is very rare in veterinary medicine and, as a consequence of dystocia, constipation and forced breeding are performed. In this case report a 5-year-old mixed breed intact female non-pregnant dog was diagnosed with cystocele using diagnostic imaging and clinical examinations. The animal was treated with cystopexy surgical technique and, a necrotic segment in the ventral side of the bladder was seen, which was treated with partial cystectomy. Cystocele is a condition mostly seen in humans and, according to our knowledge, there is only one previous report of occurrence in animals.

Introduction

Cystocele is a chronic condition mostly seen in humans in which the bladder protrudes or drops through the thinned anterior vaginal wall. Cystocele usually develops when the connective tissues and muscles surrounding the bladder and vagina and endopelvic fascia are compromised. However, this condition is very rare in veterinary medicine due to the anatomical differences. In canines the bladder is held still in the pelvis by a pair of lateral ligaments which attach to the lateral pelvic wall and a middle ligament which attaches to the symphysis pelvis.[1,2]

Causes of cystocele in humans correlates with obesity, increasing age, mating, parturition, chronically increased intra-abdominal pressure, collagen abnormality, familial history, and following pelvic surgery.[3] Moreover, pelvic surgeries, most importantly hysterectomies, sustain injuries to the endopelvic muscles and nerves, therefore increases the chance of bladder protrusion through the vagina.[4] Although in veterinary medicine, there is no specific cause introduced for this condition, however, symptoms such as constipation, dystocia, which all lead to increased abdominal pressure is a major risk factor for vaginal prolapses.[3]

* Correspondence to: Mohammad Shojaei, Razi Vaccine and Serum Research institute, Agricultural Research, Education and Extension Organization (AREEO), Karaj, Iran, Email: shojaei.mohamaddr@yahoo.com

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There are a few ways known to help with the diagnosis of the bladder prolapse, one of which is the direct pelvic examination, during the examination the veterinarian would look for a bulge into the vaginal wall, also in animals the protrusion could be seen as a bulge in perineal area. Accurate history taking and assessment of symptoms also help with the diagnosis. For further examination and precise evaluation of the prolapsed tissue, diagnostic imaging is really helpful.

X-ray cystourethrography or voiding cystourethrogram can be performed to assist evaluate the characteristic of the descended bladder and whether there is out flow obstruction. Ultrasound imaging is a safe alternative method which can be performed repeatedly to visualize the bladder and urethra, and also it can be used to evaluate if there is any urine left in the bladder after urination.[4,5]

Approaching a cystocele for treatment, depends on different variables, such as the age of the patient, future reproductive wishes, symptoms, severity of the prolapse and whether there are any concurrent conditions. The technique used to treat cystocele in animals is cystopexy. The main goal of surgery is to put the bladder back in its place and keep it still using sutures. Differential diagnosis for cystocele includes perineal hernia, rectal or uterine prolapse, tissue masses and any condition that might cause incontinence, urinary retention or hyper reactive bladder.

Case Description

In this particular case, a 5-year-old mixed breed intact female dog was presented to a private hospital in Tehran, Iran with the history of perineal mass and pain in the area, which originally was thought to be perineal herniation. First, plain ultrasonography was conducted and an anechoic mass with regular structure was seen protruded through the vaginal wall after that retrograde contrast study radiography was performed, in this way, all catheters and equipment sterilized, and the genitalia cleaned before the bladder was catheterized. Contrast cystography was performed by injecting of Iodixanol (visipaque) into the empty bladder and the bladder location was detected.[6] and it was confirmed that the mass protruded through the vagina is the bladder (Figure 1).

Figure 1. Retrograde contrast study radiography of the bladder.

Treatment and Outcome

Anesthesia was induced with propofol and proceeded with isoflurane inhalation, after that the animal was restrained in dorsal recumbency for the surgery, area was prepped with aseptically procedures and a midline incision was conducted to reach the abdominal cavity. For treatment, cystopexy was performed (Figure 2), and during the operation, a necrotic segment in the ventral side of the bladder were seen, which was treated with partial cystectomy (Figures 3 and 4). Bladder was retracted to its normal anatomical place and was fixed to the abdominal wall. Cystopexy performed between the right bladder neck and right lateral abdominal body wall, the abdominal body wall and the serosa of urinary bladder were scarified over 1 to 2 cm then used three interrupted monofilament absorbable suture (2-0 polydioxanone, Ethicon).[7] Post-operative antibiotic therapy was done by broad spectrum agent such as enrofloxacin and cefazolin. The animal ameliorated and, lives without restlessness.

Figure 2. Final appearance after cystopexy.

Figure 3. Bladder necrotic area and cystectomy.

Figure 4. Bladder necrotic area and cystectomy.

Clinical Relevance

Cystocele is a condition mostly seen in human and there is only one previous report of occurrence in animals as far as we know therefore there is few information on the etiology, chance of reoccurrence and specifics of the condition. Lack of occurrence in animal is due to the anatomical differences such as the absence of pubocervical fascia in dogs, therefore, the bladder can fully intrude the vagina without the restriction of pubocervical fascia while other ligaments are intact.[3]

Diagnosing a cystocele in humans or animals follows a similar principle, which includes history taking, clinical examination and diagnostic imaging, it is obvious that other tests should also be conducted to rule out other disorders or discover any underlying disease contributing to the condition, for instance urine may be tested for infection and etc. There is another set of tests which evaluate the function of the bladder or the urethra known as urodynamic tests or urinary function tests, and are usually performed for specialized testing such as conditions where stress incontinence is seen, these tests include electromyography, cystometrography, flow rating, urethral pressure profiling and videourodynamics.[8,9] All these tests evaluate the correlation of bladder nerve system, muscle contractility, voiding mechanisms and the pressure build up in the bladder.[4]

Symptoms of cystocele, varies depending on the site or the grade of protrusion. In human cases some women may experience no symptom at all, however, symptoms include urinary symptoms, and in some rare cases defecatory problems and etc. Urinary problems mostly are presented with urine incontinence, increased frequency of urination and outlet obstruction due to urethral folding. Defecatory problems are less seen in humans and are commonly misinterpreted as constipation.

Proceeding to treat a cystocele varies in human cases in comparison to animals. In veterinary medicine the best option is to perform cystopexy, however in human medicine there are different methods to treat a cystocele. For instance, for patients with mild to no symptoms at all, who do not wish to seek treatments for any personal reasons, conservative treatments are recommended such as pelvic muscle exercises also known as Kegel exercises and vaginal pessaries.[5] In severe cases where the condition has altered the quality of life or the conservative treatments failed to control the progression, surgical treatment is the most suitable option. Surgical technique is different in human studies, in order to assess the surgical approach, we need to evaluate whether the anterior vaginal prolapse is isolated or is combined with apical or posterior vaginal prolapse. There are two approaches for surgery, anterior colporrhaphy and sacral colpopexy. Anterior procedure is performed trans-vaginally and sacral procedure is done laparoscopically. If there is uterine prolapse as a concurrent condition, hysterectomy is also recommended.[10,11]

Conflict of Interest

The authors declare they have no conflict of interest.

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