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Canine paraprostatic cyst - a case report

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ABSTRACT

The paraprostatic cyst is not a common disease of the prostate gland. The present report describes in detail the clinical status, radiological, haematological and histological findings in a canine patient. Following non-standard surgical intervention (ureterocolonic anastomosis) the status of the patient was studied for a period of eight months.

Key words: canine prostata, paraprostatic cyst, ureterocolonic anastomosis

Introduction

Certain publications describe diseases of the canine prostate gland as benign hyperplasia, squamous metaplasia, prostatic and paraprostatic cysts, acute and chronic prostatitis, abscess, prostatic carcinoma (PETER et al., 1995; STERCHY, 1994).

The paraprostatic cyst is among the rarest of diseases (KRAWIEC, 1994, STERCHY, 1994). KRAWIEC and HEFLIN (1992) examined 177 patients with changes in the prostate gland, finding a cyst in only 2 of 177 cases.

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According to BASINGER et al. (1993), LATTIMER (1994), PETER et al. (1995) and PURSWELL et al. (2000) the cysts originated from an embryonic structure known as *uterus masculinus*.

The present report describes a case of paraprostatic cyst in a dog. Pathohistological findings in samples from the prostata evidenced a chronic inflammation. A non-standard and radical surgical intervention was undertaken. Afterwards, the patient's clinical status and laboratory findings (haematology and blood biochemistry) were studied for a period of 8 months.

Literature data on the outcome of ureterocolonic anastostomosis are few and those that do exist are quite contradictory. Therefore, the aim of the present study was to report a favourable outcome of a case of paraprostatic cyst in a dog with ureterocolonic anastomosis.

Materials and methods

A six-year-old male Boxer dog was admitted for examination and treatment at the Department of Veterinary Surgery, Trakia University, Stara Zagora. Prior to the surgical intervention the animal was examined and both native and contrast radiography, as well as laboratory tests, were performed. Following cystectomy and removal of the formation, a modified Leadbetter technique of ureterocolonic anastomosis on the descending colon was performed as described by MONTGOMERY and HANKES (1987), WALDRON (1993) and FOSSUM (1997). The same haematological and blood biochemical indexes were analysed on post-surgical days 50, 105 and at the end of the 8th month. Serology tests were performed to detect the existence of a *Brucella canis* infection. A specimen from the surgically removed tissue was submitted for histological analysis. The specimen was fixed in a 10% solution of neutral formaldehyde and processed by the routine histological technique. The sections were stained with haematoxylin/eosin (H/E).

Results

Anamnesis revealed the presence of blood drops in the urine, which appeared a month before the referral and which subsequently became more

frequent. No other pathological signs were observed during urination, nor were any other changes in the general condition of the animal.

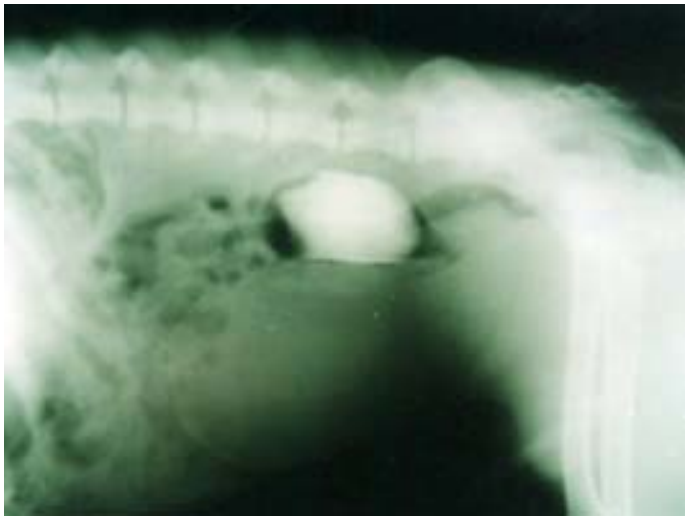

Fig. 1. Lateral abdominal double-contrast cystogram of the dog

During the clinical examination there were no deviations of the principal indexes connected with the function of the cardiac and respiratory systems. Body temperature was also normal.

A hard, elastic and non-painful formation was palpated in the caudal portion of the abdomen. Rectal palpation revealed a cylindrical enlargement of the urethra.

On native lateral radiography, a homogeneous and intensive 20-cm shadow whose shape resembled to that of the urinary bladder was observed.

Catheterization was easily performed, allowing the possibility to obtain urine samples and to perform double contrast radiography (air and sodium amidotrizoate + meglumine amidotrizoate - UROPOLIN 60%, Polfa, Poland). The double contrast radiography (Fig. 1) clearly delineated the shadow of the bladder, positioned dorsally above the formation.

Table 1. Clinical, haematological and blood biochemical parameters of the patient prior to and after the ureterocolonic anastomosis

	Prior to the operation	Post operative days					
		Day 1	Day 3	Day 5	Day 50	Day 105	Month 8
Haemoglobin, g/L	170	142	170	nd	125	140	140
Haematocrit, l/L	0.50	0.42	0.50	nd	0.36	0.40	0.42
Erytrocytes, T/L	7.85	6.05	7.60	nd	5.14	5.66	5.80
Leukocytes, G/L	6.1	26.5	20.6	14.6	7.1	11.5	8.0
Total protein, g/L	78	71	54	nd	64	51	51
Creatinine, µmolLl	69	65	86	114	662	97	64
Urea, mmol/L	4.7	4.38	9.94	7.85	3.0	3.8	9.0
Body temperature, ºC	38.5	37.9	38.8	nd	38.5	38.2	38.6
Body mass, kg	30.0	nd	nd	nd	24.5	28.5	29.0

nd = not determined

Blood tests showed no changes in the values of total protein, blood urea nitrogen and creatinine (Table 1).

On the basis of acquired data, a disease of the prostate gland, or neoplasm affecting the urinary tract, was suggested and a diagnostic median laparotomy was performed. The observed formation was found right under the site of the operative approach. Macroscopically, it appeared as a 15 x 10 cm oval mass with a red, irregular surface. At palpation, the consistency was hard and elastic, narrowing caudally resembling a cone and passing into the urethra in the area of the prostate gland. The bladder, about four times smaller, was situated dorsally above it. Bladder size, consistency and wall were normal with its ventral side connected with the formation (Fig. 2). No changes in other organs in this area were found.

On the basis of laparotomy findings and data from the earlier tests, a paraprostatic cyst was diagnosed and a decision for cyst resection was taken. During incision an attempt was made to separate the cyst from the bladder. Because of their adhesion, a general ectomy (removal of the cyst, the prostata and the bladder) was undertaken.

After separating the ends of the ureters and the seminal ducts the blood vessels of the prostate and the bladder were ligated. A ligature was placed 1 cm after the prostate, after which bleeding ceased completely. A modified

Fig. 2. The cyst and the dorsally located urinary bladder joined at their caudal parts

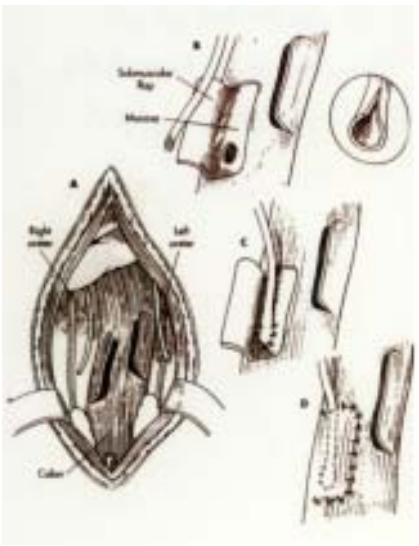

Fig. 3. Stages of ureterocolonic anastomosis - scheme after FOSSUM (1997)

Leadbetter technique of ureterocolonic anastomosis was performed as described by MONTGOMERY and HANKES (1987), WALDRON (1993), FOSSUM (1997), by incising seromuscular rectangular flaps per each ureter and a 4-mm opening of the mucous membrane beneath them in the area of the descendent colon. The lumen of the ureters was stitched with this opening and their end covered with the flap (Fig. 3). In the final phase of the operation the dog was neutered.

In the post-operative period the clinical condition of the animal was studied and haematology analyses performed (Table 1). The initial difficulty for retention of faeces and urine need to be mentioned, although these difficulties disappeared over the next ten days. Apart from that, the animal was administered a single i.m. injection of antibiotic: Lincomycin-Spectinomycin 5/10 (Alfasan; Woerden, Holland) - 1ml/5 kg body mass for 6 days.

Macroscopically, the removed tissue appeared as a large, thin-walled cavity filled with a red fluid. The bladder was connected to its dorsal wall

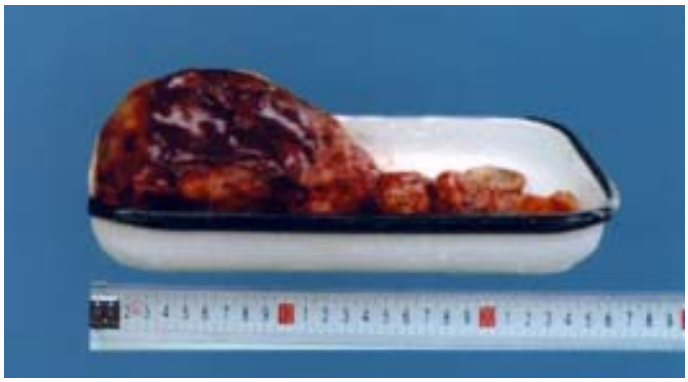

Fig. 4. Macroscopic view of removed organs (prostata, urinary bladder, part of urethra and cyst)

and it merged caudally with the formation in the area of the prostate. At the point where it merged with the prostate the tissue was of thick and elastic consistency, with a rough surface and yellow-brownish in colour. There was no communication between the cavity and the urethra (Fig. 4).

The histology of the specimen exhibited dominant proliferative processes in the interlobular and intralobular stroma. Various degrees of focal or diffuse lymphohistyocitar proliferates, often mixed with plasmatic cells, were also observed. At the same time, connective tissue growths with initial or advanced fibrosis or hyalinosis could be seen. In the

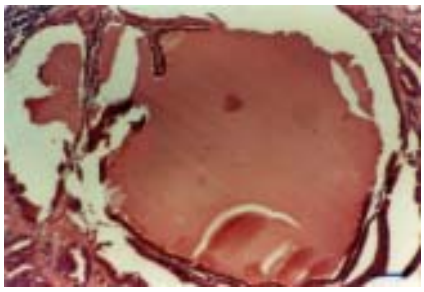

Fig. 5. Cystic formation. H&E, scale bar ≈ 4 μm.

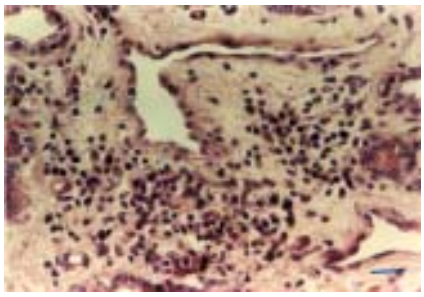

Fig. 6. Lymphohystiocytic proliferate inside the interstitium. H&E, scale bar ≈ 3 μm.

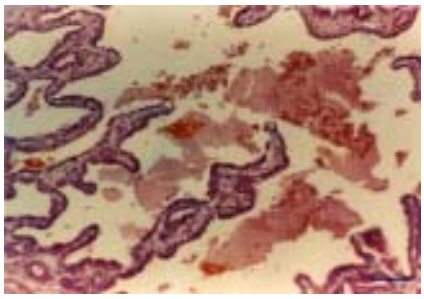

Fig. 7. Multichamber cyst and haemorrhage. H&E, scale bar ≈ 4 μm.

parenchyma of the lobules there were atrophic, dystrophic or necrobiotic changes at different phases. Among these some haemorrhages were also found. In some areas the tubules became larger and formed cyst-like cavities of different sizes. This was due to the fact that the cavities retain secretion often mixed with desquamated epithelium. (Figs 5, 6, 7).

Serological tests for *Brucella canis* were negative.

Physical examination on post-operative day 50 revealed a loss in body weight. Laboratory tests showed increased blood creatinine levels (Table 1) and the dog's owner reported that the animal had vomited. An antibiotic treatment with Ciprofloxacin (Balkanpharma - Bulgaria) at a dose of 10 mg/kg was started, being administered orally once daily for two weeks.

The same tests (Table 1) were repeated on the 105th day and at the end of the 8th month after the operation, by which time the animal had regained its normal weight. The owners did not report any other changes in the dog's condition. One year after the operation the owner further confirmed that there had been no negative changes in the patient's health.

Discussion

Results of the clinical examination, the laboratory indexes, radiography and diagnostic laparotomy, pathoanatomical examination of the extirpated organs, are all similar to the description of the paraprostatic cyst given by WALDRON (1993), LATTIMER (1994), HEDLUND (1997).

The histological findings of examined specimens evidenced signs of a chronic inflammatory process, i.e. an indication of chronic prostatitis. The

exact reason for this has not been determined since neither gland secretion nor cystic fluid has been tested. The test for brucellosis was negative. Descriptions of chronic bacterial prostatitis have been presented in various publications (PURSWELL et al., 2000; STERCHY, 1994). A similar histological picture at a later phase in the development of infectious or self-immune reactions was given by WALDRON (1993).

Treatment methods for paraprostatic cysts include their resection, marsupialization or partial prostatectomy. WALDRON (1993) states that in many cases the cysts have grown together with caudal abdominal and pelvic structures. WEADER (1978) mentioned that there were difficulties experienced during incision in 12 cases, due to the fact that the cyst was connected to the neck of the bladder or the ureters. The same problems were also encountered by us.

According to WALDRON (1993), possible complications after drainage include urinary tract infections, abscesses, urinary incontinence and chronic drainage. After performing partial prostatectomy on 20 dogs with abscesses, prostatic and paraprostatic cysts, RAWLINGS (1997) observed intermittent or minor incontinence in 5 dogs, and pyuria in a further 5 dogs.

In our report, the ureterocolonic anastomosis technique, a technique used for treatment of bladder diseases, was employed because of the encountered difficulties. The results obtained from sick and healthy patients are contradictory. STONE et al. (1988a) performed the technique in 10 healthy dogs and evaluated the post-operative period. MONTGOMERY and HANKES (1987) and STONE et al. (1988b) used the same technique for the treatment of patients with carcinoma of the bladder. The complications they reported included metabolic acidosis, higher levels of creatinine and urea, neurological problems, hydronephrosis, obstruction at the anastomosis site, pyelitis and pyelonephritis.

Observation of the clinical condition, haematological and blood biochemical indices of the patient, as well as the therapy with Ciprofloxacin, allowed us to avoid undesirable complications during a period of 8 months after the operation.

References

BASINGER, R. R., C. L. ROBINETTE, E. M. HARDIE, K. A. SPAULDING (1993): The Prostate. In: Textbook of Small Animal Surgery, 2nd ed., (Slatter D., Ed.),W. B. Saunders Company, vol. 1, pp. 1349-1367.

FOSSUM, T. W. (1997): Surgery of the Urinary Bladder and Urethra. In: Small Animal Surgery (Fossum, T. W., Ed.), Mosby-Year Book, Inc., pp. 492-494.

HEDLUND, CH. S. (1997): Surgery of the Reproductive and Genital Systems. In: Small Animal Surgery (Fossum, T. W., Ed.), Mosby-Year Book, Inc., pp. 552-562.

KRAWIEC, D. R. (1994): Canine prostatic disease, JAVMA 204, 15671-1564.

KRAWIEC, D. R., D. HEFLIN (1992): Study of prostatic disease in dogs: 177 cases (1981-1986). JAVMA 200, 1119-1122.

LATTIMER, J. C. (1994): The Prostate Gland. In: Veterinary Diagnostic Radiology (Thrall, D. E., Ed.) 2nd ed., W. B. Saunders Company. pp. 479-493.

MONTGOMERY, R. D., G..H. HANKES (1987): Ureterocolonic anastomosis in a dog with transitional cell carcinoma of the urinary bladder. JAVMA 190, 1427-1429.

PETER, A. T., J. O. M. STEINER, L. G. ADAMS (1995): Diagnosis and medical management of prostate disease in the dog. Semin. Vet. Med. Surg. (Small Anim.) 10, 35-42.

PURSWELL, J. B., N. A. PARKER, S. D. FORRESTER (2000): Prostatic diseases in dogs: a review. Vet. Med., April, 315- 321.

RAWLINGS, C. A., M. B. MAHAFFEY, J. A. BARSANTY, J. E. QUANDT, J. E. OLIVER, W. A. CROWELL, M. O. DOWNS, A. R. STAMPLEY, S. W. ALLEN (1997): Use of partial prostatectomy for treatment of prostatic abscesses and cysts in dogs. JAVMA 211, 868-871.

STERCHY, P. (1994): Erkrankungen Geschlechsts Organe beim Rüder. In: Praktikum der Hunderklinik, (Hans Niemand, Peter Suter, Eds), Blackwell Nissenschafs-Verlag, Berlin. pp. 618-622.

STONE, E. A., M. C. WALTER, M. H. GOLDSCHMIDT, D. N. BIERY, K. C. BOVEE (1988a): Ureterocolonic anastomosis in clinically normal dogs. Am. J. Vet. Res. 49, 1147-1153.

STONE, E. A., S. J. WITHROW, R. L. PAGE, P. D. SCHWARZ, S. L. WHEELER, H. B. SEIM 3rd (1988b): Ureterocolonic anastomosis in ten dogs with transitional cell carcinoma. Vet. Surg. 17, 147-153.

WALDRON, D. R. (1993): Urinary Bladder In: Textbook of Small Animal Surgery, 2nd ed., (Slatter D., Ed.) ,W. B. Saunders Company, vol. 1. pp. 1450- 1462.

WEADER, A. D. (1978): Discrete prostatic (paraprostatic) cyst in the dog. Vet. Rec. 102, 435-440.

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BAKALOV, D., N. GORANOV, R. SIMEONOV: Paraprostatična cista u psa. Vet. arhiv 74, 85-94, 2004.

SAŽETAK

Paraprostatična cista rijetka je bolest prostate psa. U radu je detaljno opisana klinička slika te radiološki, hematološki i histološki nalazi takve ciste u jednog psa. Stanje pacijenta promatrano je tijekom osam mjeseci nakon kirurške obradbe tj. učinjene ureterokolonske anastomoze .

Ključne riječi: pas, prostata, cista, ureterokolonska anastomoza