

COMPARATIVE ULTRASONOGRAPHIC STUDY ON PROSTATE AND BULBOURETHRAL GLANDS OF TOMCAT

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Abstract

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12 sexually matured, clinically healthy European short hair tomcats, aged from one to two years, were studied. Transabdominal prepubic sonographic approach was used. The prostate gland was observed in three views. A perineal sonographic approach was applied about investigation of the bulbourethral glands - in two views.

The feline prostate was visualized as a solid heterogeneous finding with a relatively high echogenicity. The glandular stroma is with higher echogenicity, compared to the parenchyma. The bulbourethral glands were observed as solid, dorsoventral ovoid, heterogeneous structures with a relatively higher echogenicity, compared to the prostate. The use of the prepubic ultrasonography, with filled urinary bladder is a definitive method about visualization of feline prostate gland. The applying of the perineal ultrasonography is a qualitative method about visualization of the bulbourethral glands.

Key words: prostate, bulbourethral glands, ultrasonography, tomcat

Introduction

The ultrasonography is a non invasive method for visualization of the male sex organs in the animals and man. The prostate and bulbourethral glands are studied about a lot of imaging anatomic characters as topography, shape, symmetry, sizes, echogenicity and cystic lesions (Barr, 1997; Campero et al., 1988; Webber and Woods, 1992; Clark and Althouse, 2002; Yagci et al., 2004).

The tomcat's prostate is a symmetric organ, composed by two parts, situated dorsolaterally to the prostatic urethra and caudodorsally to the cranial edge of the pelvic symphysis (McClure et al., 1973).

The feline prostate is less developed than canine one, and the prostate urethra is shorter. The gland doesn't embrace the urethra ventrally, compared to the dog (Barsanti, 1995).

A lot of authors (Souza et al., 2002) have found, that there isn't a remarkable correlation between ages, body mass, localization, shape and sizes of the prostate, in rectal investigation of dogs.

In accordance with the finding of (Atalan et al., 1999), the weight of the canine gland correlates with its volume, body mass and age.

In the small animals, the transrectal ultrasonography is applied for investigation of the gland, mainly about experimental aims, while in the man, allows an

excellent visualization (Zohil and Castelano, 1995).

The human prostate is studied in three views sagittal, transversal and dorsal, and its position depends on the fullness of the urinary bladder (Chacarski, 1996).

After castration, the prostate involutes and its parts are difficultly differentiated. The matured prostate is symmetrically homogenous and echoic (Barr, 1997).

In the dog, before reaching sexual maturity, the prostate gland is with small sizes, its parts are weakly differentiated, and its image is homogenous and hypoechoic (Selcer, 1995; Basinger, 1997).

In the tomcat, the bulbourethral glands are pair organ and they are situated behind the prostate, above ischial arch, at the caudal end of the membranous urethra, m. urethralis and m. bulbospongiosus, in front of the penis root (McClure et al., 1973).

The human bulbourethral glands are oval, yellowish structures, with size of pea's grain, localized dorsolaterally to the end of the membranous urethra, between the both fascias of the pelvic diaphragm. Depending on their topography, the glands are diaphragmal, diaphragmal-bulbar and bulbar (Chughtai, 2005).

The transrectal ultrasonographic study of boar's bulbourethral glands demonstrated, that they are visualized as elongated, oval echoic findings with anechoic central parts (Clark and Althouse, 2002).

In the bull and stallion, the bulbourethral glands are studied sonographically transrectally (Campero et al., 1988; Weber and Woods, 1992).

The human bulbourethral glands are investigated sonographically perineally about their cystic degeneration (syringocele) by Shaw et al. (2004).

In the man, they are visualized as small tubular findings, situated parallelly to the urethra (Palvica et al., 1989).

The bulbourethral glands in the man are investigated sonographically transrectally in case of hemospermia, neoplasias, inflammation and lithiasis (Yagci et al., 2004).

The scarce data about the comparative ultrasonographic features of feline prostate and bulbourethral glands motivated us to undertake the

present study.

AIM: A comparative investigation of the normal ultrasonographic characterization of tomcat's accessory sex glands.

Matherial and Methods

We studied the accessory sex glands of 12 sexually matured, healthy clinically European short hair tomcats, aged from one to two years. The animals were anesthetized by the following schema: Atropinum sulfuricum (Sopharma) 0.03 mg/kg m. sc, after 15 min. Xylazin (Alfazan) 2 mg/kg m. im and after 15 min. Ketamin (Alfazan) 15 mg/kg m im (Dinev and Aminkov, 1999). The urinary bladder of six individuals was catheterized and filled with isotonic solution - Natrii chloridum 0.9% (Balkanpharma). We made the investigation of prostate and bulbourethral glands with Micrus ultrasonic equipment Aloka SSD 500 with linear transducer (frequency 5MHz and front length 56mm) and CHISON 600 VET with multi frequent microconvex transducer (frequency 7MHz and radius 20 mm). The findings were documented with Mitsubishi P91E printing device. About better contact between transducer and skin, we used gel (Eko-gel® Lessa, Espana). The prostate was observed in three views transverse, longitudinal and oblique one at angle 45° toward the median plane. The sonographic approach was transabdominal, prepubic. The bulbourethral glands were studied in two views sagittal and transversal. The sonographic approach was perineal.

Results

The tomcat's prostate was visualized as a solid heterogeneous finding with a relatively high echogenicity. The glandular stroma is with higher echogenicity, compared to the parenchyma.

The gland's caudal border wasn't observed, because of the closeness of the pelvic bones and its position behind the pelvic shoot. The normal prostate was localized dorsolaterally to the ventrally represented hypoechoic urethra, and the periurethral zone was hyperechoic and homogeneous (Figures 1 and 2).

The data, obtained by us, were proving that the prostate was a bigger voluminous finding than this of the bulbourethral glands.

The results from the investigations motivated to recommend the use of the prepubic sonographic method with filled urinary bladder as a good method about visualization of the feline prostate in transverse, longitudinal and oblique views.

The study, performed by us, confirmed our conviction, that the appliance of the transrectal ultrasonography, with a view to demonstrating the caudal glandular border is difficultly applicable, because of the higher invasiveness of the method and the small sizes of the rectum, which correlates with the results of (Zohil and Castelano, 1995) in the dog.

Because of the cranioventral abdominal position of the filled urinary bladder and highly developed body of feline prostate, we like (Selcer, 1995; Basinger et al., 1997) propose the prepubic transabdominal sonographic approach as a definitive method for studying the shape, sizes and structure of the normal feline prostate. Similarly to the attitudes of (Barsanti, 1995; Barr, 1997), we confirm that filled with liquid urinary bladder is a good acoustic window for observation of the gland via prepubic ultrasonography.

Our results about the appliance of the perineal sonographic approach in investigations of the feline bulbourethral glands' caudal parts add the data of (Campero et al., 1988; Weber and Woods, 1992; Clark and Althouse, 2002; Shaw et al., 2004; Yagci et al., 2004) about the appliance of the transrectal method, used in study of the glands in the man, boar, bull and stallion, mainly in cranial aspect.

The dorsoventral ovoid shape of the feline bulbourethral glands, determined by us, corresponds with the studies of (Clark and Althouse, 2002) about their shape in the boar, according to whom, they are craniocaudally ovoid.

The obtained data about the sonographic features of the tomcat's bulbourethral glands correlate with these in the man (Palvica et al., 1989).

The prepubic transabdominal sonographic method is a definitive method about study the shape, sizes and structure of the normal feline prostate. The perineal

ultrasonography is a definitive method about visualization the feline bulbourethral glands in transversal and sagittal aspect.

Conclusion

The data of the present study, motivate us to conclude, that from the comparative ultrasonographic study of the feline male accessory sex glands can be obtained detailed imaging anatomic data, who are important for the diagnosis and clinical practice.

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