Clinical Management of Detrusor Sphincter Dysynergia (DSD) in a Dog

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Abstract
A four year old female spitz dog weighing 9.5 kg was presented with the history of dysuria since five days and abdominal palpation revealed distended urinary bladder. Radiograph and ultrasound confirmed distended bladder and bilateral nephrolith. Catheterization was performed and no obstruction was found, around 600 ml of urine was drained. The animal was treated with oral Diazepam, Prazosin and Bethanechol. On fourth day of treatment the animal was able to urinate normally and it was advised to continue the treatment for two weeks. The animal recovered uneventfully.

Keywords: Bethanechol; detrusor sphincter dysynergia; diazepam; distended urinary; dog; prazosin etc.

Introduction
Detrusor sphincter dysynergia (DSD) is a consequence of a neurological pathology such as spinal injury (Karsenty, 2005) or multiple sclerosis (Stankovich et al., 1999) that disrupts central nervous system regulation of the micturition reflex resulting in dyscoordination of the detrusor muscles of the bladder and the external urethral sphincter muscles. Normal lower urinary tract function, these two separate muscle structures act in synergistic coordination. But in this neurogenic disorder, the urethral sphincter muscle, instead of relaxing completely during voiding, dyssynergically contracts causing the flow to be interrupted and the bladder pressure to rise (Corcos et al., 2004). These have a tremendous impact on their quality of life.

History and Observation
A four year old female spitz dog weighing 9.5 kg was presented with history of dysuria since five days. Clinical examination showed that the animal was dull and depressed and abdominal palpation revealed distended urinary bladder. Manual expression of the bladder, urine was not evacuated and neurological examination revealed normal. Haematological and biochemistry results were within the normal range. Radiograph and ultrasound confirmed distended bladder and bilateral nephrolith.

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Treatment
Catheterization was performed and no obstruction was found, around 600 ml of urine was drained. The animal was treated with oral Diazepam, a skeletal muscle relaxant @ 0.04mg/kg b.wt BID to relax the external urethral sphincter, Prazosin, a smooth muscle relaxant @ 1mg/15 kg b.wt. BID for internal urethral sphincter relaxation and Bethanechol, a detrusor contracting agent @ 2mg/kg b.wt. BID for bladder contraction. On fourth day of treatment the animal was able to urinate normally and it was advised to continue the treatment for two weeks. The animal recovered uneventfully.

Discussion
The normal function of the bladder is storage and timely elimination of urine. These functions are performed by coordinated actions between the detrusor and the urethral sphincter under the control of brain and lumbosacral spinal cord (Groat et al., 1993). During storage, the detrusor is relaxed and the urethral sphincter contracts. During voiding, the detrusor contracts and the urethral sphincter relax (Groat et al., 2001). In cases after spinal cord injury above lumbar level this reciprocal interaction between detrusor and urethral sphincter disappears (Groat, 1975). Instead, detrusor and urethral sphincter contract simultaneously – DSD and the detrusor also contracts frequently even at relative small bladder volumes – detrusor hyperreflexia. DSD generates high bladder pressure, prevents complete
elimination of urine and requires urethral catheterization. High bladder pressure causes vesicoureteral reflux and renal failure in the long-term. Residual urine in bladder and urethral catheterization cause cystitis and infection (Burns, 2001). In the present case early diagnosis and treatment recovered the animal and improve the future quality of life.

**Conclusion**

A four year old female spitz dog weighing 9.5 kg was presented with the history of dull, anorexia and dysuria since five days. Abdominal palpation revealed distended urinary bladder. Manual expression of the bladder, urine was not evacuated and neurological examination revealed normal. Haematological and biochemistry results were within the normal range. Radiograph and ultra sound confirmed distended bladder and bilateral nephrolith. Catheterization was performed and no obstruction was found, around 600 ml of urine was drained. The animal was treated with oral Diazepam, Prazosin and Bethanechol. On fourth day of treatment the animal was able to urinate normally and it was advised to continue the treatment for two weeks. The animal had a unevenful recovered.

**References**


