

MANAGEMENT OF DETRUSOR SPHINCTER DYSSYNERGIA (DSD) IN A DOG

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ABSTRACT

A seven year old female Doberman dog was presented with the history of dullness, anorexia and dysuria for three days. Abdominal palpation revealed distended bladder, which was confirmed by plain radiography and ultrasonography on Neurological examination animal was found to be normal. On manual compression of the bladder urine was not evacuated, therefore by catheterization was performed and no obstruction was found; around three litres of urine was drained. The animal was treated with oral Diazepam, @ 0.04mg/kg, Prazosin, 1mg/15 kg and Bethanechol, @ 2mg/kg bd. wt. 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 an unevenful recovery.

Key Words: Detrusor - Sphincter Dyssynergia (DSD), distended bladder, Dog.

Inappropriate contraction or failure of relaxation of either the internal (smooth muscle) or external (striated muscle) urethral sphincter or both coincident with detrusor contraction results in a micturitional disorder known as detrusor sphincter dyssynergia (DSD) (Yalla, *et al.*, 1977). It is a consequence of 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 discoordination of the detrusor muscles of the bladder and the external urethral sphincter muscles. In 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

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the bladder pressure to rise (Corcos *et al.*, 2004). The present paper discusses the successful management of detrusor sphincter dyssynergia in a dog.

A seven year old female Doberman dog was presented with the history of dullness, anorexia and dysuria for three days. Clinical examination showed that the animal was dull and depressed and abdominal palpation revealed distended urinary bladder, confirmed by radiography and ultrasonography. By manual compression of the bladder, urine was not evacuated. Haemato- biochemical parameters were normal except for an elevated blood urine nitrogen (BUN) (72.2mg/dl) and creatinine (2.5 mg/dl).

Catheterization was performed using infant feeding tube (No.9) and no obstruction was found; around three litres of urine was drained. The animal was treated with oral diazepam, a skeletal muscle relaxant @ 0.04mg/kg bd. wt BID to relax the external urethral sphincter; prazosin, a smooth muscle relaxant @ 1mg/15 kg bd. wt BID for internal urethral sphincter relaxation and bethanechol, a detrusor contracting agent @ 2mg/kg bd. 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 had an uneventful recovery.

The normal function of the bladder is storage and timely elimination of urine.

Micturition depends on the co-ordination between the bladder and external urethral sphincter (Holstege *et al.*, 1986). These functions are performed by coordinated actions between the detrusor and the urethral sphincter under the control of brain and lumbo-sacral spinal cord (de 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 (de Groat, *et al.*, 2001). In cases, after spinal cord injury above lumbar level this reciprocal interaction between detrusor and urethral sphincter disappears (de Groat 1975). DSD generates high bladder pressure, prevents complete elimination of urine, and requires urethral catheterization. These lower urinary tract dysfunctions then produce various problems, such as urinary incontinence, recurrent urinary tract infection and vesicoureteral reflux with or without upper urinary tract deterioration (de Groat and Yoshimura, 2006). 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). On the basis of duration and completeness of suprasacral cord injury dyssynergia were graded as 1, 2 and 3 (Yalla *et al.*, 1977).

In the present case BUN and creatinine values were elevated, this might be due to the accumulation of urine in the bladder. Early diagnosis and treatment aided in improving the quality of life.

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