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RESEARCH ARTICLE

DIAGNOSIS OF CANINE PROSTATIC HYPERPLASIA AND CYST

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ABSTRACT

Six mixed breed dogs aged between seven to eight years were presented to the TVCC, CVSc & AH, CAU, Selesih, Aizawl, Mizoram with the history of anorexia, tenesmus, lethargy, dull and depressed with dribbling of foul smelling bloody urine for few days. Physical examination revealed slightly tensed abdomen with pale mucous membrane. Blood biochemical examination revealed significantly decreased haemoglobin, packed cell volume, total erythrocyte count, total protein and albumin with significantly elevated blood urea nitrogen, serum creatinine and leukocytosis with neutrophilia. Lateral abdominal radiography revealed cranial displacement of urine filled urinary bladder with slightly enlarged prostate which descended from the pelvic cavity. Ultrasonography revealed loss of bi-lobed prostate appearance with presence of three anechoic cavities and parenchyma surrounding the cavity was slightly hypoechoic and heterogeneous which was diagnosed as prostatic cyst. Diffusely enlarged prostate with uniform echotexture, spherical in sagittal section and asymmetrical on transverse plane was diagnosed as prostatic hyperplasia.

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INTRODUCTION

Benign prostatic hyperplasia (BPH) is a condition in which the prostate gland is enlarged. Prostatic affections are more frequent in dogs compared to other domestic animals. Prostatic hyperplasia, inflammation, cysts and neoplasia are the most common affections recorded in dogs; benign hyperplasia is also a disease of man (Nicola, 2006 and Boucif *et al.*, 2015). Canine prostatic affections often give overlapping signs making final diagnosis much more difficult to achieve based only on symptoms (Smith, 2008). Benign prostate hyperplasia (BPH) is the most common disease which affects the canine prostate in almost all adult intact dogs of over 7 years age and most dogs develop benign prostate hyperplasia without showing any clinical signs (Korodi *et al.*, 2008). Clinical findings accompanied with digital rectal examinations indicating BPH; however, the precise and final diagnosis could be reached only by ultrasonographic assessment (Paclikova *et al*., 2006; Kibar *et al.*, 2012 and Boucif *et al.*, 2015).

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Clinical findings and diagnosis

Six mixed breed dogs aged between seven to eight years old were presented to the Teaching Veterinary Clinical Complex, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University, Selesih, Aizawl, Mizoram, with the history of anorexia, tenesmus, lethargy; dull and depressed with dribbling of foul smelling bloody urine for few days. Clinical examination revealed tachycardia with tachypnoea, pale mucous membrane with mildly dehydrated, dull and depressed animal. Palpation of the ventral abdomen elicited discomfort with tensed distended abdomen. Blood examination was recorded with significantly decreased haemoglobin (9.65 ± 1.43 gm/dl), packed cell volume (32.29 ± 3.57 %), total erythrocyte count (4.34 ± 0.13 mm/cumm) and lymphocytic count (7.79 ± 0.27 %) with significantly increased total leukocyte count (16.65 ± 0.62 cells/cumm) and neutrophils (87.75 ± 1.71 %). Among the biochemical parameters, there were significantly elevated alkaline phosphatase (115.86 ± 16.51 U/L), blood urea nitrogen (39.45 ± 13.64 mg/dl), serum creatinine (2.23 ± 0.16 mg/dl) and significantly decreased total protein (5.28 ± 0.67 g/dl) and albumin (2.29 ± 0.54 g/dl) levels were recorded. Lateral radiograph of abdomen and pelvis in three dogs revealed cranial displacement of urine filled urinary

bladder and caudal displacement of colon, which was slightly compressed by the prostate (Fig-1). Catheterization and evacuation of urine revealed enlarged prostate with uniform radio density of the gland (Fig-2). The lateral radiograph of abdomen and pelvis in other three dogs revealed enlarged prostate which descended from the pelvic cavity by narrowing and pushing the rectal lumen dorsally (Fig-3). Ultrasonography of caudal abdomen revealed diffused hyperechoic urinary bladder wall thickening (≥ 8mm) with hyperechoic mucosal interface and an irregularly shaped echogenic mass within the anechoic lumen which tended to settle on dependent part of the bladder and those cases were diagnosed as chronic severe cystitis (Fig-4).

revealed mildly irregular shaped prostate (3.73 cm), loss of normal bilobed appearance with centrally located anechoic dilated urethra (Fig-6), presence of three clear anechoic fluid filled cavities indicative of intra-prostatic cysts and the parenchyma surrounding the cysts was slightly hypoechoic and heterogeneous (Fig-7). Intra-prostatic cysts were easy to distinguish from other masses of the prostate by using diagnostic ultrasound and therefore the cases were diagnosed as prostatic cyst.

DISCUSSION

Tachycardia, tachypnoea, pale mucous membrane, dull, depressed animal with tensed distended abdomen observed in the present prostatic abnormalities were also observed by

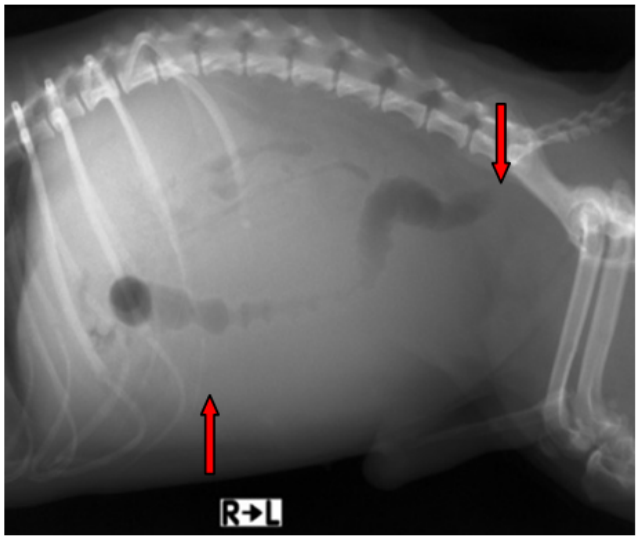

Fig-1: Radiography revealed cranial displacement of urine filled urinary bladder and caudal displacement of colon, which was slightly compressed by the prostate

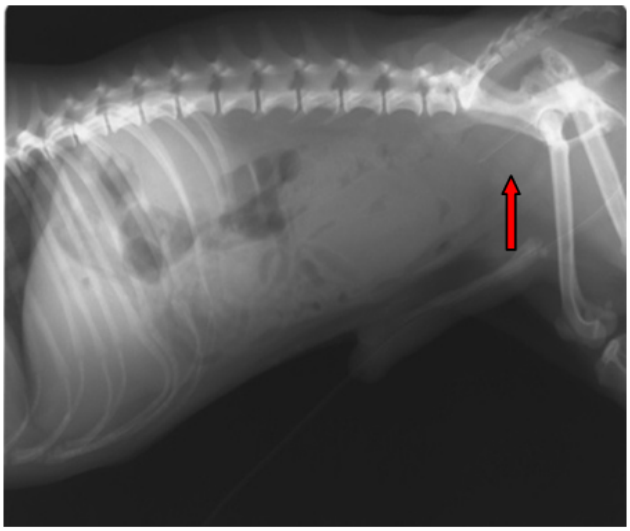

Fig-2: Radiography revealed enlarged prostate with uniform radio density of the gland after catheterization and evacuation of urine

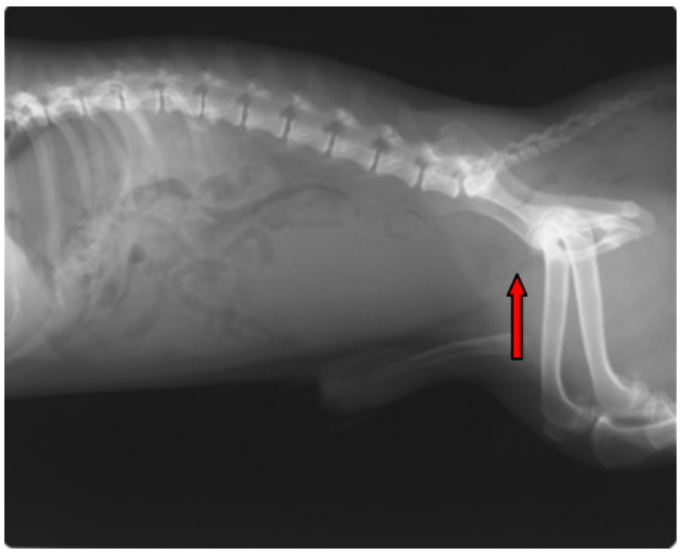

Fig-3: Enlarged prostate which descended from the pelvic cavity by narrowing and pushing the rectal lumen dorsally.

Prostate gland showed diffusely increased echogenicity with uniform echotexture and appeared spherical in sagittal section and was asymmetrical on transverse plane (Fig-5) and therefore the present cases were diagnosed as benign prostatic hyperplasia. In other three cases, sagittal sonogram of prostate

Bhadwal and Mirakhur (2000), England (2005), Senior (2005), Barsanti (2008), Santa *et al.* (2008) and Yahia and Salem (2015) in canine with prostatic hyperplasia and prostatic cyst. Contrary to the present findings, Das *et al*. (2017) observed passing of small thin tape-shaped faeces and hind

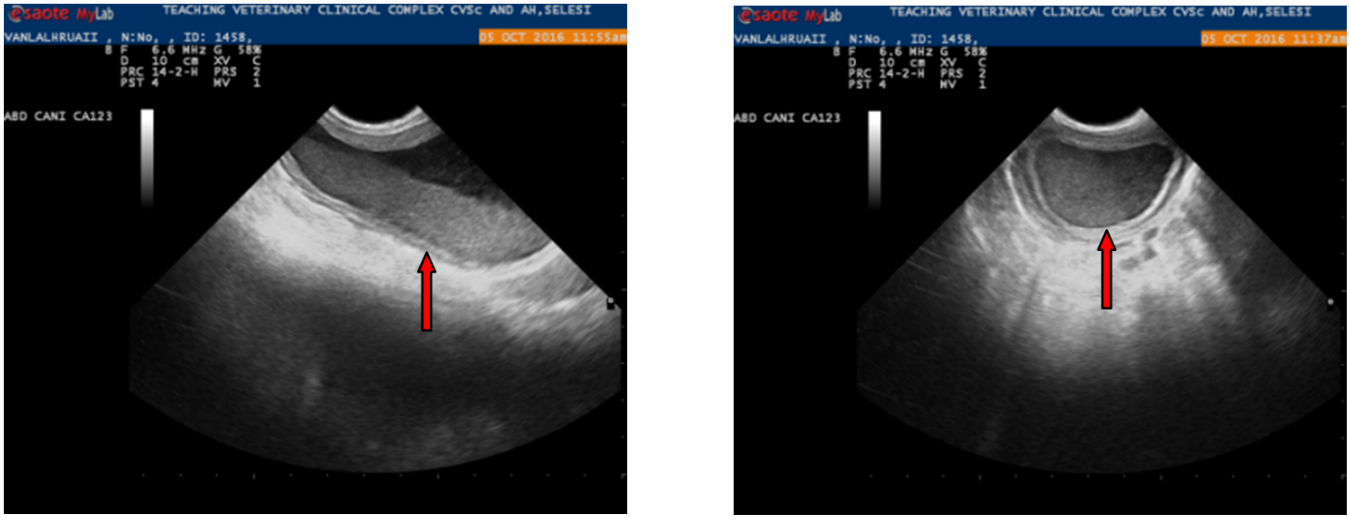

Fig.4. Ultrasonography of urinary bladder revealed diffused hyperechoic wall thickening (≥ 8mm) with hyperechoic mucosal interface and an irregularly shaped echogenic mass within the anechoic lumen indicating severe cystitis

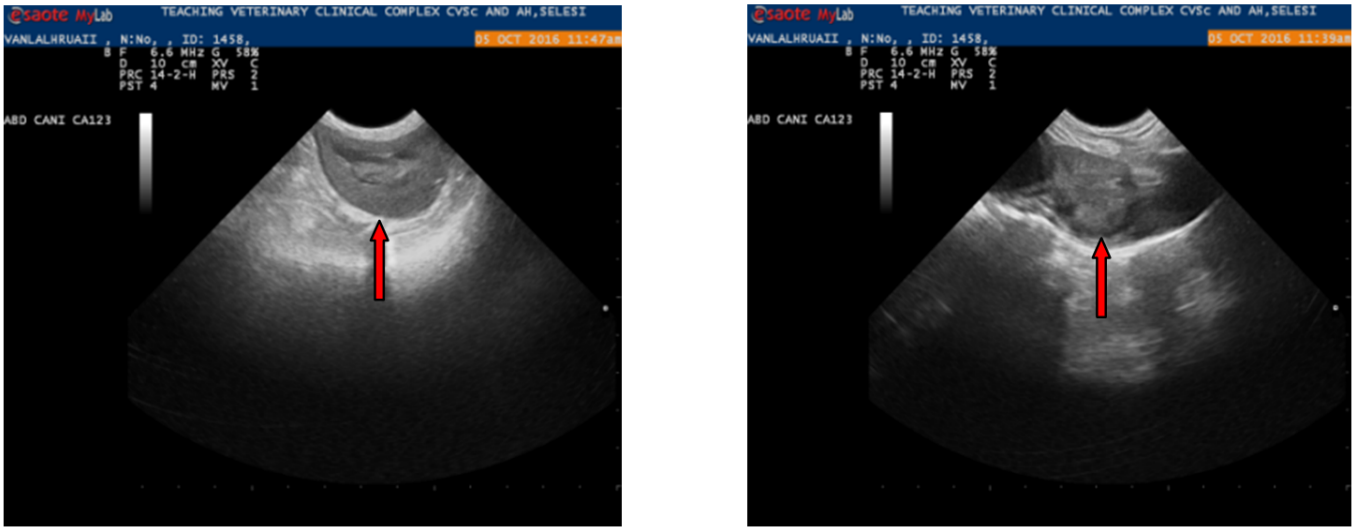

Fig.5. Ultrasonographically the benign prostatic hyperplasia showed diffusely increased echogenicity with uniform echotexture and appeared spherical in sagittal and asymmetrical on transverse plane

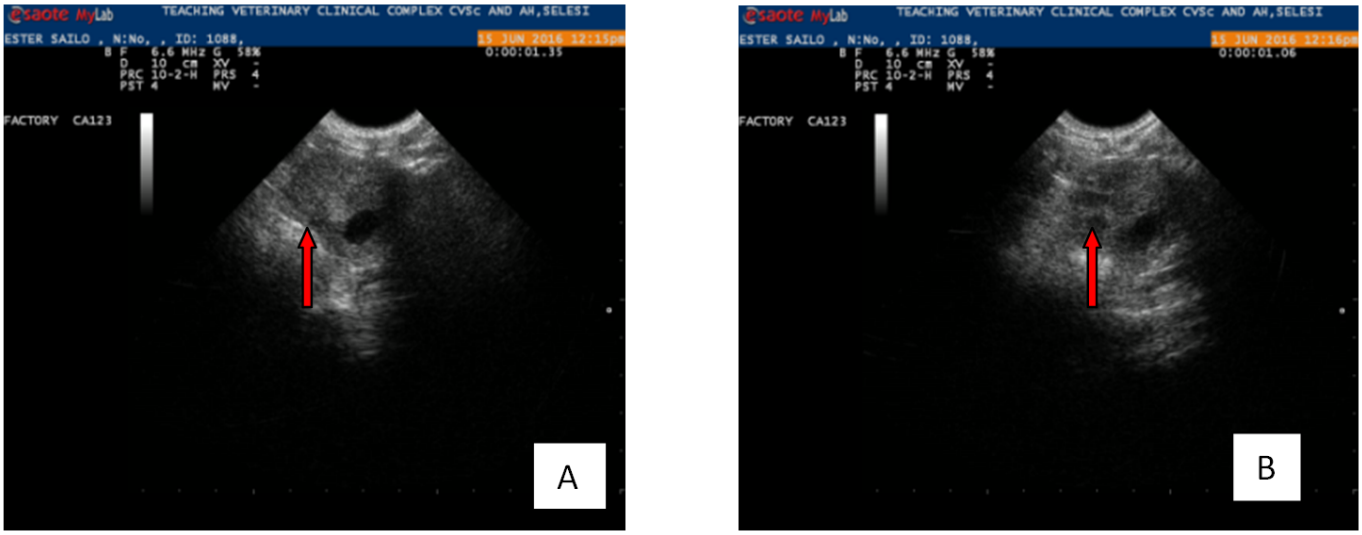

Fig.6. Sagittal sonogram of prostate revealed mildly irregular shaped prostate (3.73 cm), loss of normal bilobed appearance with centrally located anechoic dilated urethra (A). Presence of clear anechoic three intra-prostatic cysts (B)

limb paralysis along with the other common clinical signs in benign prostatic hyperplasia. Significantly decreased haemoglobin, packed cell volume and total erythrocyte counts recorded in the present study was also reported by Mukaratirwa and Chitura (2007), Geddes (2011) and Das *et al*. (2017) in the dogs with prostatic hyperplasia. The reduction of haemoglobin and packed cell volume values might be due to haematuria and also due to urinary obstruction caused by prostatic enlargement resulting chronic kidney disease that resulted in decreased erythropoietin production and decreased capacity of bone marrow to produce red blood cell, which ultimately resulted in lower total erythrocyte count production (Das *et al*., 2017). Significantly increased total leukocyte count and neutrophils recorded in the present study was also reported by Barsanti (2008) in acute prostatitis and abscessation, but in chronic prostatitis, the WBC was normal. Significantly decreased lymphocytes and increased eosinophils in dogs with benign prostatic hyperplasia were also reported by Das *et al*. (2017). Significantly decreased lymphocytes and significantly increased eosinophils might be due to secondary bacterial infection of chronic in nature and might be due to decomposition of body protein. Significantly elevated alkaline phosphatase recorded in the present study was also reported by Barsanti (2008) in chronic prostatitis. Contrary to the present findings, Das *et al*. (2017) recorded with nonsignificantly increased creatinine and blood urea nitrogen in benign prostatic hyperplasia. Significantly decreased total protein and albumin was also reported by Das *et al*. (2017). Significantly decreased total protein and albumin recorded in the present study indicating the possibility of hypoproteinemic status of the dogs which might be due to inappetence and weakness. Significantly increased blood urea nitrogen level was believed to be characterized by increased catabolism due to inappetence and progression of kidney infections.

Dogs with enlarged prostate revealed cranial displacement of urinary bladder with caudal displacement of colon as was slightly compressed by the prostate. The prostate descended from the pelvic cavity by narrowing and pushing the rectal lumen dorsally. Similar observation was also reported by Prathaban (2002) and Dębiak and Balicki (2009) in the cases of prostatic diseases. Normal prostate did not displaced colon or urinary bladder from its normal position and survey radiographs were often of limited value in diagnosis of specific prostatic diseases, except the enlargement (Prathaban, 2002). Paclokova et al. (2006) also reported that radiology played a role in the basic evaluation of position and general size of the prostate gland. Ultrasonographically, the prostate gland was recorded with increased echogenicity with uniform echotexture and appeared spherical in sagittal section and was asymmetrical on transverse plane in the cases of benign prostatic hyperplasia. Similar observations were also reported by Bhadwal and Mirakhur (2000), Barsanti (2008), Santa *et al.* (2008), Boucif *et al*. (2015) and Yahia and Salem (2015) in the cases of prostatic hyperplasia. Paclikova *et al*. (2006) and Kibar *et al.* (2012) reported that the benign prostatic hyperplasia revealed enlarged prostate with retained shape, symmetry and smooth margin on ultrasonographic examination. Echotexture was unchanged, but the echogenicity was slightly more prominent in case of benign prostatic hyperplasia. Bradley (2011) reported that the prostate gland was usually mildly to moderately enlarge and appeared smoothly marginated and symmetrical under ultrasonography in cases of benign prostatic hyperplasia and metaplasia. The echotexture of the gland in benign prostatic hyperplasia was variable as diffusely hyperechoic but might appear heterogeneous. From the study it was observed that in any prostatic disease there was increased parenchymal echogenicity (Paclikova *et al*., 2006). The sagittal sonogram of prostate revealed mildly irregular shaped prostate (3.73 cm), loss of normal bilobed appearance with centrally located anechoic dilated urethra, presence of anechoic cavities indicative of intra-prostatic cysts and the parenchyma surrounding the cysts was slightly hypoechoic and heterogeneous. Similar observations were also reported by Bradley (2011) for prostatic cyst. Inflammation or neoplasia resulted in hyperechogenic foci, while cyst was typically detected as hypo or anechogenic nodules (Paclikova *et al*., 2006).

Conclusion

Radiography played an important role in the basic evaluation of position and general size of the prostate gland but the ultrasonography was more precised diagnostic tool than x-rays, especially in examination the inner structure of prostate gland. Prostatic size, volume and consistency could be evaluated better with ultrasonography than radiography.

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