ESTIMATION OF PROSTATIC SIZE IN DOGS USING TRANSABDOMINAL ULTRASONOGRAPHY *

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ABSTRACT

Transabdominal ultrasonographic evaluation was carried out to estimate prostatic size in 43 adult male dogs of four different breeds. Adult German shepherd dogs had a mean prostatic volume and weight of 26.62±1.58 cm^3 and 24.33±1.65 g respectively. The mean prostatic volume and weight in adult Rottweilers were found to be 26.32±2.55 cm^3 and 24.01±2.66 g respectively. Among the adult male examined by transabdominal ultrasonography in Dachshund the mean prostatic volume and weight were found to be 13.07±0.96 cm^3 and 10.89±0.10 g respectively, while the prostatic volume and weight in case of adult Spitz were observed to be 11.63±0.24 cm^3 and 8.71±0.25 g respectively. The study confirmed that age and body weight of the animal had a positive correlation with prostatic volume and weight.

Key words: Dog, prostate, Transabdominal ultrasonography, Prostatic size

Estimation of size of prostate is important in the diagnosis of prostatic diseases and in monitoring the response of such conditions to treatment. There are several clinical methods to evaluate prostatic size in the dog including rectal palpation, radiography, ultrasonography etc. Transabdominal or transrectal ultrasonography provides a reproducible and accurate method of measuring prostatic dimensions. It provides information on the shape, dimensions, lobular structure and echo texture of the gland parenchyma. In India, there is a paucity of studies on canine prostate gland using ultrasonography. Hence the present study was carried out to estimate the prostatic size in different breeds of dogs using ultrasonography.

The study was performed on 43 adult male dogs presented to the out patient unit of Veterinary College Hospital, Mannuthy and University Veterinary Hospital, Kokkalai during the period between January 2009 and March 2010. The group consisted of fourteen German shepherd of mean age 4.03± 0.77, ten Rottweiler of mean age 3.35± 0.42, nine Dachshund of mean age 3.94± 0.77 and ten Spitz of mean age 2.95± 0.42 years.

Transabdominal ultrasonographic imaging of the prostate and measurement of prostatic dimensions were based on the protocol established by Atalan *et al.* (1999b). For the purpose of examination, the dog was positioned in dorsal or dorso- lateral recumbency and for imaging the gland, the probe was placed against the ventral abdominal wall cranial to the pubis. Standard longitudinal and transverse sections (Fig.1 and 2) were obtained and prostatic volume and weight were estimated using the formulae suggested by Atalan *et al.* (1999b):

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Prostatic volume (in cm^3) = 0.487 ´ L ´ W ´ (DL + DT) / 2 + 6.38

Prostatic weight (in g) = 0.508 ´ L ´ W ´ (DL + DT) / 2 + 3.21

[L = maximum length (cm) in longitudinal section, DL= maximum depth (cm) in longitudinal section, W = maximum width (cm) in transverse section, DT = maximum depth (cm) in transverse section].

Data obtained were compiled and analyzed using standard statistical procedures (Snedecor and Cochran, 1989).

Among German shepherd, the mean prostatic volume and weight arrived upon by using the formula was 26.62±1.58 cm^3 and 24.33±1.65 g respectively. The mean prostatic volume and weight among Rottweiler dogs were 26.32±2.55 cm^3 and 24.01±2.66 g respectively. In Dachshund, the mean prostatic volume and weight were 13.07±0.96 cm^3 and 10.89±0.10 g respectively. In Spitz, the mean prostatic volume and weight were 11.63±0.24 cm^3 and 8.71±0.25 g respectively. There was positive correlation ($p<0.01$) between age and prostatic volume and prostatic weight in German shepherd and Dachshund. Similarly there was positive correlation ($p<0.01$) between body weight and prostatic volume and prostatic weight in both the breeds. In Rottweiler, the highly significant correlation ($p<0.01$) was obtained between age and prostatic volume and prostatic weight. In Spitz, there was highly significant correlation ($p<0.01$) between body weight and prostatic volume and prostatic weight. In them, correlation was significant ($p<0.05$) between age and prostatic volume and prostatic weight. No dogs examined were showing benign prostatic hyperplasia.

When considering the whole of the adult normal dogs examined, calculated mean prostatic volume and weight were 20.23±1.34 cm^3 and 17.66±1.41 g respectively.

The findings of the present study slightly differed from Ruel *et al.* (1998), Atalan *et al.* (1999a) and Kamolpatana *et al.* (2000) who obtained slightly lesser prostatic volume of 18.9±15.5cm^3, 12.3cm^3 and16.77±11.77 cm^3 respectively. In the present study, there was highly significant positive correlation between age and prostatic volume and age and prostatic weight and between body weight and prostatic volume and body weight and prostatic weight when all adult intact animals are considered together. The findings of Ruel *et al.* (1998), Atalan *et al.* (1999a) and Atalan *et al.* (1999b) and Gadelha *et al.* (2009) were in agreement with the observations made in present study. The variations in measurements obtained in the present study were probably due to differences in breed, age and body weight.

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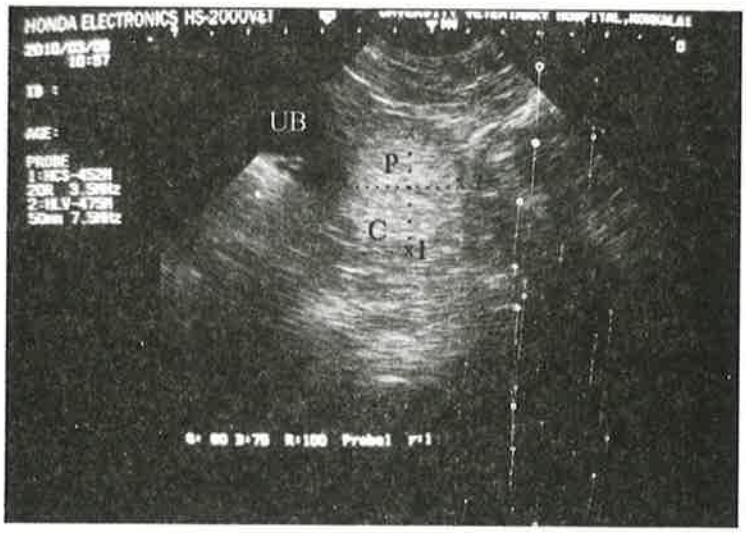
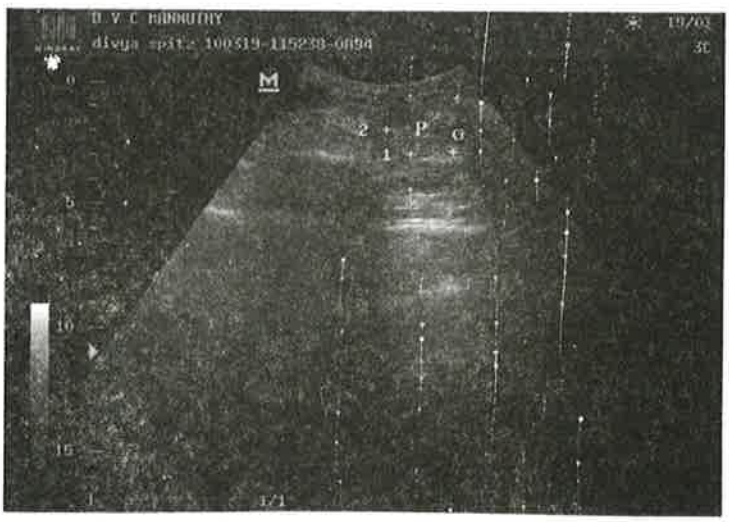
Fig.1.



Transabdominal ultrasonogram (7.5MHz transducer) of prostate of a German shepherd dog in longitudinal section. P indicates prostatic parenchyma and C indicates capsule of the prostate. Measurement 1 indicates length (L) and 2 indicates depth (DL).

Fig. 2.



Transabdominal ultrasonogram of prostate (7.5MHz transducer) of Spitz in transverse section. P indicates prostatic parenchyma. The hypoechoic area (G) between the lobes represents glandular parenchyma. Measurement 1 indicates depth (DT) and 2 indicates width (W).