ABSTRACTS

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Formula-derived prostate volume determination of normal healthy intact dogs in comparison to dogs with clinical BPH

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OBJECTIVES AND METHODS: Ultrasound scan of the canine prostate has become a common clinical procedure to determine prostatic size and pathological lesions. Formulae have been reported to estimate the normal prostatic volume based on a given age, bodyweight or both (1,2). However, age and bodyweight of the animals included in previous studies markedly varied, i.e. age ranging from 9 months to 14 years (1) and between 4.5 and 65 kg bodyweight (2). In addition, some dogs had intra-prostatic cysts (1) or had been castrated (3). The objective of Study I was to establish a formula to estimate volume of a normal-sized canine prostate. The objective of Study II was to compare prostate volume of clinically ill dogs suffering from benign prostatic hyperplasia (BPH) with estimated volume of the normal prostate (Study I) for the same bodyweight.

Study I included 101 healthy intact dogs free from any prostatic disorders as determined by clinical signs and ultrasonographic examination. Dogs, aged 1.5-4 years old, were divided into 7 groups depending on their body weight (group I; >1-5, group II; >5-10, group III; >10-15, group IV; >15-20, group V; >20-25, group VI; >25-30, group VII; >30 kg). Their body condition scores were 3 out of 5 scoring. Prostatic width, length and depth were measured by transabdominal ultrasound and the volume was then calculated using a previously reported formula (4). Seventeen clinically ill dogs with BPH, aged ranging between 4.5 and 13 years and weighted ranging between 3.6 and 48 kg, were included in Study II. Their prostatic volumes were determined using the same protocol (4) used in Study I. Data were analysed using Pearson coefficient correlation and multiple linear regression analysis with P<0.05 considered statistical significant.

RESULTS: Statistical analysis showed no differences in animal’s age among groups (I-VII) and there were strong positive correlations between body weight and prostatic size as well as body weight and prostatic volume. Group VII had higher prostatic volume compared to any groups (P < 0.05), and no difference in the volume was detected between group I and II. The regression equation was expressed as Prostatic volume (cm3) = 0.33 x body weight (kg) + 3.28.

In comparison with Study I, prostatic volume of all dogs with clinical BPH was significantly greater (P < 0.01) than mean prostatic volume of normal dogs or the estimated prostatic volume of a dog with similar body weight, derived from the regression equation (Study I).

DISCUSSION AND CONCLUSION: Development of the canine prostate is divided into 3 phases, i.e. a phase of normality (1 to 5 years), a phase of hyperplasia growth (6 to 10 years) and a phase of senile involution (11 years and over) (5). Age limit of dogs was set between 1.5 and 4 years because at these ages the prostate is most likely to be normal. Therefore, the regression equation to estimate if the prostate volume of a dog is normal for a given bodyweight reported in this study could be useful in clinical practice when questioning if the examined prostate is oversized or dealing with the prostate volume of dogs with subclinical BPH. The results obtained from Study II indicated the reliability of the regression equation derived from Study I.