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Seminal alterations and prostatic and testicular hemodynamic features of dogs with untreated benign prostatic hyperplasia and treated with finasteride

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Benign prostatic hyperplasia (BPH) is the most common disease of dog senescence. Orchiectomy is the treatment of choice for BPH, but for breeding dogs drug therapy with finasteride can be an alternative. However, the use of finasteride in men has been associated with erectile dysfunction, loss of libido and decreased sperm viability caused by oligospermia and azoospermia\(^\text{1}\). In dogs, few studies are available regarding finasteride influence on sperm quality and prostatic and testicular hemodynamic alterations. Therefore, the aim of this study was to evaluate the effects of treatment with finasteride on seminal parameters and hemodynamic and vascular changes of the prostate and testicles in BPH dogs. For this purpose, the study was conducted using 10 dogs of several breeds, body weights (10-30 kg) and ages (5 to 13 years). The experimental groups consisted of BPH dogs (BPH - n=5) and BPH dogs treated with finasteride (HPB+F - n=5). Three evaluations were done in a monthly interval (0 day – initial treatment with finasteride; 30 days; 60 days). Dogs were evaluated for libido (scored 1-3) and semen analysis, which consisted of sperm-rich fraction volume, sperm concentration, automatic sperm motility(CASA) and vigor, plasmatic membrane permeability (eosin/nigrosine stain), acrosomal integrity (fast green/rose bengal stain), sperm mitochondrial activity (3,3’diaminobenzidine stain), sperm DNA integrity (toluidine blue stain), sperm morphology and flow cytometry analysis of mitochondrial potential (JC1 dye) and membrane/acrosome integrity (FITC-PI dyes). Furthermore, seminal plasma was evaluated for oxidative stress (TBARS concentration) and glutathione peroxidase (GPx) activity. Prostatic and testicular Doppler ultrasonography was performed in order to measure volume and hemodynamic profile (PS, ED, TAMAX, RI, PI and S/D) of the prostatic and testicular arteries. Moreover, subjective score (1-3) of prostate vascularity was performed by spectral Doppler. The effect of groups was analyzed using the Student t test or Wilcoxon (p≤0.05). The prostate volume was similar in both groups at 0 and 30 days; however, in day 60, BPH group (68.8±9.7 cm\(^3\)) was superior to BPH+F group (42.5±12.3 cm\(^3\)). Also, vascularization score at day 60 was higher in BPH group (2.4±0.2) compared to BPH+F group (1.6±0.2). Moreover, BPH presented higher sperm linearity movement (63.2±3.5) and increased percentage of high mitochondrial activity (77.4±4) compared to BPH+F group (66.7±3.5, respectively). For the Doppler ultrasonography, the pulsatility index (PI) of the prostatic artery was higher in HPB group (2.1±0.2) compared to HPB+F group (1.99±0.1). The remaining sperm variables and the others ultrasonographic analyses were not different between groups. Based on our results, finasteride therapy reduces prostate volume after 60 days of treatment, simultaneously to decreasing angiogenesis held by BHP, represented by a decrease in prostate perfusion (PI). Conversely, finasteride causes reduction in sperm linearity and mitochondrial activity. These findings may indicate that long-term finasteride therapy can cause important changes in sperm quality, like asthenozoospermia. In conclusion, the two-month period of finasteride treatment causes prostate reduction, but no significant semen quality alteration, preserving reproductive potential of BPH dogs.

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