Proceedings of the
8th International Symposium
on Canine and Feline Reproduction
ISCFR

June 22-25, 2016
Paris, France

In a joint meeting with the XIX EVSSAR Congress

Reprinted in IVIS with the permission of the ISCFR Organizers
The influence of Benign Prostatic Hyperplasia on sperm DNA fragmentation in dogs
Renato Bueno Flores, Daniel de Souza Ramos Angrimani, Bruno Rogério Rui, Maira Morales Brito, Renata Azevedo Abreu, Marcilio Nichi, Camila Infantosi Vannucchi
Department of Animal Reproduction. University of Sao Paulo, Sao Paulo, Brazil, renato.vet31@hotmail.com

Canine senescence is been considered a focus of study in several areas of Veterinary Medicine. Among the most common disorders of geriatric dogs, the benign prostatic hyperplasia (BPH) has a higher incidence. Along with the clinical signs of constipation, tenesmus, dysuria, hematuria and hematospermia, BPH can promote local oxidative stress, increasing oxygen reactive species (ROS) and decreasing prostatic antioxidant defense\(^1\). These can cause sperm defects and higher DNA fragmentation, which can interfere directly with reproductive efficiency, causing low fertility rates and fetal malformations\(^2\). However, there are few studies regarding BPH influence on sperm DNA integrity in dogs, although the dog is considered the ideal study model for BPH in man, due to the similarities of the disease. Therefore, the aim of this study was to compare sperm DNA fragmentation rates between healthy and dogs affected with benign prostatic hyperplasia. For this purpose, the study was conducted using 10 dogs of several breeds and body weights (10-30kg) and aged between 5 and 13 years. The experimental groups consisted of dogs without BPH (Control – n=5) and dogs with BPH diagnosis (n=5). The diagnosis of BPH was made based on the observation of clinical signs and ultrasonographic analysis of prostatic diameter. Three seminal collections were performed from each dog, with a monthly interval. Thus, a total of 15 sperm samples were collected for each experimental group. After sperm collection, the percentage of sperm DNA fragmentation was performed through toluidine blue stain\(^3\). Semen sample were smeared and fixed in 96% ethanol-acetone (during 30 min at 4°C). Then, smears were hydrolysed in 0,1N HCl (5 min at 4°C), washed in distilled water (3 times – 2 min each), and stained in the toluidine blue solution (0.05%) for 20 minutes. Blue stained spermatozoa were considered to have DNA fragmentation. All data were evaluated by Student t test or Wilcoxon (p≤0.05). The control group showed significant (p=0.01) higher percentage (95.7±1.8%) of sperm DNA integrity in comparison to BPH group (79.2±6.4%). This result shows that BHP promotes greater DNA fragmentation, possibly due to the negative influence of prostatic fluid ROS, increasing sperm oxidative stress\(^1\). Thus, such changes in sperm DNA may incur directly in reduced sperm quality, unleashing less efficiency during the reproductive process and, ultimately, promoting changes in the progeny. In conclusion, BPH can alter sperm DNA structure, leading to increased fragmentation rates. Thus, an accurate diagnosis of DNA fragmentation is needed for BPH dogs, combined with complementary techniques (i.e. analysis of reproductive oxidative stress), which can provide the necessary support to identify individuals with reduced potential for genetic disorders. The careful sperm analysis of aged dogs can result in a reproductive success even during senility.