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Ultrasound elastography of the normal canine prostate and testicles
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Ultrasoundography is the imaging modality of choice for the evaluation of prostate and testicles of mammals, including dogs. Elastography is a relatively new technology that can measure the elasticity and stiffness of tissues, providing the sonographer with important information that can increase the diagnostic sensitivity of ultrasound exams. Several types of elastography techniques have been developed. Real time or strain elastography and shear-wave elastography are the most commonly used. Several studies in human medicine describe the use of strain elastography in breast, thyroid, prostate, lymph node, liver, and musculoskeletal imaging1. On the other hand, in veterinary medicine, elastography is in its infancy, with very few published reports. To our knowledge, only one study has described elastography characteristics of canine prostate2 and none of the canine testicles. The purpose of this study was to present the elastography parameters of canine normal prostate and testicles. Ultrasound elastography of the prostate and the testicles of 20 dogs free of pathological findings was performed. An ultrasound scanner (Logiq F8 ultrasound machine, with Strain Imaging Technology software, General Electric) with a compatible linear array probe (L6-12 RS, GE) was used for examining dogs in standing position and not sedated. Strain of the prostate and the testicles was induced by external compression (guided by a strain graph, as a press guide function) using the ultrasound probe. Regions of interest (ROIs) were drawn in the prostatic or testicular parenchyma, in the tunica vaginalis, in the epididymis, and in surrounding tissues. Pixel color percentages for each ROI were determined. Tissue softness or hardness was depicted by a color scale (blue = hard, red = soft). Strain values and quantitative analysis were performed using GE’s built-in software. The parenchyma of the testicles appeared yellow to green, outlined by a red colored softer tissue, representing the outer layer of tunica vaginalis. Epididymides were always harder and blue colored when compared to the parenchyma of the testis. Prostate was relatively homogeneously yellow to green, softer than the abdominal wall, but harder than the surrounding tissue. Mean strain values (± SD) were: testicles 1.46±0.34, epididymis 2.49±0.74, prostate 1.43±0.33, and surrounding tissues 1.01±0.77. Elastography is a minimally invasive modality for the evaluation of tissue stiffness of prostate and testicles. This study provides normal strain values that can be used for further correlation with pathological situations of the reproductive organs of the male dog.