

The effect of positioning on renal dimension in healthy dogs by ultrasonography

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Abstract

Ultrasonography is an optional method to evaluate the urinary system, which can be used to check the tissue and dimensional changes of kidneys. This technique is used to diagnose kidney diseases and changes in kidney size following treatment. The measurement of kidney can make it possible to observe more length of renal vessels and diverticula, from the dorsal view or taking transverse views. The aim of the present study was to evaluate the influence of positioning on measurement of renal dimension and their correlation to length of lumbar (L) vertebrae and abdominal aortic (AO) diameter by ultrasonography. The survey was conducted on twenty natives, adult healthy dogs. Renal length (L), width (W), height (H) and volume were measured in right lateral recumbency (RLR) and dorsal recumbency (DR) for the left kidney (LK), and in left lateral recumbency (LLR) and (DR) for the right kidney (RK) by ultrasonography. The aortic diameter and Length of the L₅ and L₆ were measured by ultrasonography and L₂, L₃ and L₄ by radiography. Ratios were also calculated between dimensions of kidneys and lumbar vertebrae. Based on the paired sample t test, length and width of both kidneys were significantly larger than DR in RLR and LLR, while the height of the right kidney was significantly smaller than DR in LLR. There was no significant difference between the heights of left kidney in both positioning. There was a direct significant correlation between renal dimension with AO and vertebral length. Kidney length had the best Pearson correlation coefficient. There was no significant difference between renal dimension ratio and vertebral length. The ratio means of both left and right kidney length to L₂ was obtained, 2.2 and 2.3, to L₅, 2 and 2.1 and to AO, 7.3 and 7.3, respectively. In conclusion, the findings of the present study showed that the imaging mode had an effect on kidney dimensions. Therefore, it is necessary to compare kidney dimensions with the same imaging mode, in repeated ultrasonography of an animal.

Key words: Ultrasonography, Positioning, Kidney Dimension, Dog

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