Ultrasonographic Reference Values of Kidney Dimensions and Clinicopathological Findings Associating the Transcutaneous Ultrasound-Guided Renal Biopsy in Donkeys (Equus asinus)

Hussein Awad Hussein, Ahmed Ibrahim, Marwa F.Ali

Abstract:

This study aimed to establish normal ultrasonographic reference values of kidney dimensions in donkeys (Equus asinus) and to describe and evaluate the clinicopathological variations associated with ultrasound-guided renal biopsy. The ultrasonographic dimensions of the right and left kidneys were conducted on 16 donkeys, which were then divided into two groups; eight each for biopsy of the right kidney (RK) and left kidney (LK). Three ultrasonographic cineloops were obtained at 17th intercostal space daily for 3 consecutive days. Renal length, width, and dimensions of the cortex, medulla, and pelvis for both the kidneys in each donkey were recorded. Maximal dimensions were obtained for the RK (length 10 ± 8 cm, width 4.9 ± 1 cm, thickness 4.2 ± 0.4 cm) and LK (length 8.9 ± 0.9 cm, width 4.7 ± 0.8 cm, thickness 3.5 ± 0.7 cm) with good-to-excellent repeatability for all measurements. Follow-up ultrasonography revealed development of postbiopsy subcapsular hematomas, which were confirmed postmortem, of mild (volume 40 mL). Gross hematuria had been observed till 24 hours after biopsy, and then microscopic hematuria was noticed thereafter. Variable clinicopathological changes were noticed in blood and urine. All the biopsy specimens were adequate for histopathological assessment. Postmortem histopathological examination revealed various kidney changes. In conclusion, kidney dimensions can be used by veterinarians for accurate diagnosis and management of renal diseases. Ultrasound-guided renal biopsy is a relatively safe procedure; however, some complications may develop. Renal biopsy is commonly associated with clinicopathological variations; thus, caution should be taken during interpretation of these variables.

Keywords:

Donkey, Kidney Dimensions, Biopsy, Ultrasound, Clinicopathological

Published In:

Journal of Equine Veterinary Science, 68, 1-11