Diagnosis of renal disorders in dogs using ultrasound technique.

Ruchi Tripathi and Hemant Mehta**
Department of Veterinary Medicine
College of Veterinary Sci &A.H.Mhow (M.P.)

** Corresponding author

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ABSTRACT
The present work was undertaken to diagnose the renal disorders in dogs using ultrasound technique and correlate the clinical findings, haematobiochemical changes and urine analysis with ultrasound observations. Out of 72 dogs, 11 (15.28%) were diagnosed for renal diseases. Out of renal disorders (15.28%), 07 comprising of Renal failure (9.73%) and 04 of Pyelonephritis (5.55%). Ultrasonographically, loss of architectural detail, hyperechoic periphery, indistinct contours of renal cortex and small sized kidney were observed in renal failure. In pyelonephritis increased echogenicity of the renal cortex and medulla. Renomegaly with lack of demarcation of corticomedullary junction.

Key words: Diagnosis, Renal Affections, Ultrasonotghaphy, Dogs.

Renal diseases are important clinical problems encountered in dogs and are frequent cause for illness and death. Common diagnostic approaches to hepatic disorders include conventional clinical examinations, routine haematological examination, biochemical estimation and urinalysis. Ultrasound is one of the modern diagnostic and highly beneficial aid in the diagnosis of kidney diseases. It allows us to look at the internal anatomy and size of the organs. During last few decades, two-dimensional B-mode and real time ultrasonography has been introduced (Nyland and Park, 1983) and using canines to (Kundu and Wrigley, 2005; Mareschal et al., 2007).

In India, application of Ultrasonography in the diagnosis of canine renal affections is still in infancy. The present investigation describes the use of Ultrasonography for the diagnosis of diseases of kidney using canines experimental models interpret diagnostic applications.

The present study was carried out at Teaching Veterinary Clinical Service Complex (T.V.C.S.C.), College of Veterinary Science and A.H., Mhow (M.P.) to diagnose renal disorders in dogs. A total of 72 dogs, comprising 42 male and 30 female were screened. The selection of dogs for the study was based on the anamnession and clinical observation. Dogs presented with history of anorexia, weakness, consistent vomiting, weight loss, polyuria, polydypsia, oliguria and anuria were considered for present study.

Dogs were clinically examined in detail and the presence of signs, such as arching of back, oedematous swelling in limbs and joints, ascites, seizures, ulcers in the buccal cavity, tongue and stomach were recorded for renal affections.

Ultrasoundographic examination of Kidneys of healthy as well as ailing dogs, suspected for renal disorders, was performed with Toshiba Famio 5 diagnostic ultrasound system (model SSA-510A) B-mode using a 3.5-5 MHz convex transducer. The left kidney was scanned through the ventral abdominal wall or the flank caudal to the last rib using spleen a acoustic window. The right kidney was scanned in dorsal recumbency by placing the transducer caudal to right costo-spinal angle and in the middle of the last intercostals spaces. Cross section, longitudinal and transverse images were recorded. Ultrasonograms were evaluated for liver size, shape, contour and its internal architecture including alteration in echogenicity and intensity.

Evaluation of hepatic disorders is one of the important indications of abdominal sonography in dogs. Clinical and ultrasonographic findings in dogs with renal disorders are mentioned in Table-1. The clinical signs recorded in renal disorders were vomiting (90.9%) followed by anorexia (81.81%), polydypsia / polyuria (54.54%), ulcers in the buccal cavity, tongue and stomach (54.54%), oedematous swelling in limbs and joints (45.45%) and seizures (27.27%). The present observations are in line with Kaur and Dhaliwal (2006), Anon (2007) and Mallela et al. (2006). The nitrogenous waste products called azotemia build up in the blood stream. These waste products may also change the pH.
and may cause ulcers in the mouth, tongue, stomach and intestine. This might cause vomiting, anorexia and weight loss. Erythropoietin is not secreted in adequate quantity and anaemia results. The nervous system is affected by all of these problems. If uraemia is severe seizure can result (Anon, 2007 and Mallela et al., 2006). These clinical signs were also noticed by Nandy and Pradhan (2006), Osborne (2005). Out of 11 cases (15.28%), 07 comprising of Renal failure (9.73%) and 04 of Pyelonephritis (5.55%). Renal failure was diagnosed in 7 (9.73%) dogs. Out of that 4 dogs showed ultrasonographically loss of architectural detail of renal parenchyma. Indistinct contours of renal cortex. Hyperechoic periphery and small sized kidney. Lack of demarcation of corticomedullary junction. Rest 3 dogs showed small sized kidney, loss of architectural detail of renal parenchyma with well defined irregular border in Ultrasonography. These observations of the present study were in agreement with Kundu and Ghosh (2005), Margeschel et al. (2007) and Anon (2007). The decreased size of kidney in dogs could be related to renal failure and loss of architectural detail has been a significant feature of renal diseases due to gradual loss of functional nephrons (Felaki et al., 1992 and Verma, 2005).

Pyelonephritis was recognized in 4 dogs. Increased echogenicity of the renal cortex and medulla, Renomegaly with lack of demarcation of corticomedullary junction in 2 cases. Sonographically hyperechoic cortex and medulla, small patchy and irregular shaped kidney with poor differentiation between cortex and medulla were suggestive of pyelonephritis in 2 dogs. Similar observation have been reported by Neuwirth et al. (1993), Konde et al. (1984), Gray (1996) and Green (1996) explained that in pyelonephritis renomegaly, increased echogenicity of cortex and medulla, dilated renal pelvis. It might be due to inflammation of renal pelvis and renal parenchyma. Pelvic dilatation appeared as a black C, as the walls of renal pelvis were separated by small amount of fluid with the enlarged proximal ureter observed by Verma (2005).

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References