ULTRASONOGRAPHIC STUDIES FOR DIAGNOSIS OF
CLINICAL ABDOMINAL PATHOLOGICAL CONDITIONS IN
DOGS

ABSTRACT

Key words: Dog, Pyometra, Ultrasonography

The aim of the present study entitled “Ultrasonographic studies for diagnosis of clinical abdominal pathological conditions in dogs” was to enhance the use of ultrasonography as a diagnostic tool in the effective management of abdominal disease conditions in dogs presented at Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, Junagadh Agriculture University, Junagadh. In present study 100 clinical cases were screened out of either sex or age out of which 25 cases were selected with their clinical signs and showing any pathological condition of gastrointestinal, hepatobiliary, urinary, genital systems and spleen. In all the animals the symptoms were misleading. Confirmation of the pathological conditions were made with the help of ultrasonography as well as with hematobioc hemostatus of animal. All the selected 25 animals underwent surgical operation. In present study all 100 cases were divided according to their age, sex and breed.

Pyometra was diagnosed in 10 cases by ultrasonography in which anaemia with decreased mean Hb 9.3 ± 1.04 (11.9 – 18.9), mean PCV 28 ± 2.41 (35 – 57) and mean TEC 5.27 ± 0.53 (5 – 7.87). Mean increasing values of neutrophils 78.04 ± 4.14 (58 - 80), mean leucocytosis 29342 ± 2992.95 (5000 – 14000) with shift to left and elevated mean ALP 142.25 ± 11.30 (1 – 114), mean BUN 32.09 ± 5.77 (8 – 28), mean Cr 2.67 ± 1.05 (0.5 – 1.7) and mean total bilirubin 1.418 ± 0.46 (0 – 1) were observed with mean hypoalbumenemia 2.12 ± 0.25 (2.3 – 3.1). Common ultrasonographic examination revealed sacculation of uterus with convoluted uterine horns filled with homogenous anechoic to hypoechoic fluid. Hyperechoic thickened uterine wall and hyperechoic mobile internal echoes in the lumen of uterus.

Cystoliths were diagnosed in 3 cases by ultrasonography. Mean PCV values 49.63 ± 8.10 (35 – 57) were towards increase line, mean leucocytosis 23973 ± 6262.95 (5000 – 14000), mean neutrophilia 87.66 ± 4.25 (58 - 80) and mean lymphopenia 6.33 ± 3.17 (8 - 25) were observed. Mean elevated BUN 71.33 ± 21.75 (8 – 28) and mean Cr 5.22 ± 3.41 (0.5 – 1.7) were seen. Common ultrasonographic examination revealed sacculiation of uterus with convoluted uterine horns filled with homogenous anechoic to hypoechoic fluid. Hyperechoic thickened uterine wall and hyperechoic mobile internal echoes in the lumen of uterus.

Cystic endometrial hyperplasia pyometra complex was observed in 4 cases by ultrasonography. Mean Hb 7.44 ± 1.84 (11.9 – 18.9), mean PCV 21.66 ± 5.39 (35 – 57) and mean TEC 3.43 ± 0.80 (5 – 7.87) were markedly decrease however mean leucocytosis 34892.5 ± 4316.17 (5000 – 14000), mean neutrophilia 88.47 ± 0.35 (58 - 80) and mean lymphopenia 5.5 ± 0.64 (8 - 25) seen. Elevated mean AST 72 ± 11.23 (10 – 62), mean AKP 156 ± 12.49 (1 – 114) observed and mean BUN 23.62 ± 4.61 (8 – 28), mean Cr 1.55 ± 0.17 (0.5 – 1.7) and mean TP 7.6 ± 0.234 (5.4 – 7.5) were towards higher levels along with mean hypoalbumenemia 2.4 ± 0.18 (2.3 – 3.1).
Ultrasonographic findings of uterus revealed distension of uterus filled with anechoic to hypoechoic fluid. Hyperplastic and thickened endometrial wall with multiple, rounded, small to large sized, smooth margined cavities filled with anechoic fluid present on the succolated uterine horns were cysts.

Intestinal obstruction was observed in 2 cases by ultrasonography. Laboratory findings showed mean leucocytosis 31150 ± 2150 (5000 – 14000) with mean increasing values of neutrophils 79.5 ± 1.5 (58 - 80). Elevation of mean AST 110.64 ± 10.35 (10 – 62), mean TP 10.46 ± 0.69 (5.4 – 7.5) and mean albumin 4.42 ± 0.27 (2.3 – 3.1) were observed. Ultrasonographic findings revealed dilation of intestinal lumen with static hypoechoic to hyperechoic luminal contents creating acoustic shadowing distally.

Ventral hernia was observed in 3 cases by ultrasonography. Haematology revealed mean leucocytosis 18456 ± 1355 (5000 – 14000) with mean increasing values of neutrophils 76.33 ± 2.18 (58 - 80). Decrease level of mean Cr 0.37 ± 0.09 (0.5 – 1.7), mean TP 3.41 ± 0.10 (5.4 – 7.5) and mean albumin 1.81 ± 0.07 (2.3 – 3.1) were observed. Ultrasonography of ventral hernia revealed multiple hypoechoic intestinal loops with anechoic to hyperechoic mucous coming out from palpable hyperechoic hernial ring due to discontinuity of abdominal muscles.

Intussusception was observed in 1 case by ultrasonography. Laboratory findings revealed decrease in Hb 9.2 (11.9 – 18.9), PCV 30 (35 – 57) and TEC 4.96 (5 – 7.87), with leucocytosis 28090 (5000 – 14000), neutrophilia 93.4 (58 - 80) and lymphocytopenia 3.6 (8 – 25). Elevation of ALP 256 (1 – 114), BUN 60 (8 – 28), Cr 2 (0.5 – 1.7) and hyperalbumenemia 4 (2.3 – 3.1) were observed. Ultrasonography findings of the intestine revealed dilatation of intestinal wall and absence of intestinal peristalsis movement. Concentric hypoechoic and hyperechoic intestinal rings characterised as “archers target” or “bulls eye” in transverse plane and as a series of linear hyperechoic and hypoechoic streak or sausage like appearance in sagittal plane.

Benign prostatic hyperplasia and cyst was observed in 1 case by ultrasonography. Decrease values of Hb 9.2 (11.9 – 18.9), PCV 29.7 (35 – 57), TEC 4.66 (5 – 7.87), TP 5.28 (5.4 – 7.5) and albumin 2.07 (2.3 – 3.1) were found along with leucocytosis 16200 (5000 – 14000) and neutrophilia 83.4 (58 -80). Increase values of AST 75.41 (10 – 62), ALP 172.1 (1 – 114), BUN 36 (8 – 28), and Cr were observed 2.26 (0.5 – 1.7). Ultrasoundography revealed a diffusely enlarged, homogenous hypoechoic echotexture spherical in shape (prostate) consisting of 2 clear anechoic fluid filled cysts surrounded by hypoechoic and heterogeneous prostatic parenchyma.

Gall bladder stone and renomegaly was found in 1 case by ultrasonography. Leucocyte count 12610 (5000 – 14000) and neutrophil count 77 (58 -80) were towards higher values. Elevated level of ALP 325.4 (1 – 114), Cr 1.73 (0.5 – 1.7) and total bilirubin 3 (0 – 1) along with decrease level of albumin 2.02 (2.3 – 3.1) was found. Ultrasonography of gall bladder revealed anechoic and elongated gall bladder. A hypoechoic uniform biliary sludge and a single, small, hyperechoic, rounded structure seen which was attached to the base of thickened, hyperechoic gall bladder wall which was a gall stone creating acoustic shadow on the ultrasound scan.

Renomegaly found with choledolith. Ultrasonography revealed enlarged kidney with hyperechoic renal pelvis, anechoic to hypoechoic medulla, hyperechoic cortical infiltration with increased cortical to medullar diameter.

It was concluded that, the use of ultrasonography has its challenges in the diagnosis of abdominal disease conditions. The clinical and haematobiochemical findings observed in the animals were found in accordance to the pathology involved as revealed in ultrasonographic findings. The ultrasonographic examination of abdomen aided in the diagnosis of pyometra, liver cirrhosis, cystoliths, ventral hernia, cystic endometrial hyperplasia pyometra complex, gastrointestinal obstruction, intussusception, benign prostatic hyperplasia and gall bladder stone in all affected dogs.

It was noted that ultrasonography has been found reliable, non-invasive and good diagnostic imaging modality for detection of abdominal disease conditions. Routine ultrasonography is proposed to be a beneficial procedure for the prompt, cost effective and non-invasive diagnostic procedure of abdominal disease conditions in dogs.