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# Radiographic, Electrocardiographic and Echocardiographic Evaluation in dogs with ascites

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**Abstract**

Dogs presented with the history of abdominal distension, anorexia, respiratory distress and pedal oedema were selected for study. Radiography, ultrasonography and echocardiography were used for evaluation of these dogs. Radiographic findings were characteristic ground glass appearance. Ultrasonographic findings were hepatomegaly, hyperechoic, hypoechoic and mixed echogenicity of liver parenchyma etc. Echocardiographic findings were dilated cardiomyopathy, congestive heart failure, pericardial effusions.

**Keywords:** Ascites, Radiography, Ultrasonography, Echocardiography.

Ascites is defined as collection of serous or serosanguinous fluids in the peritoneal cavity (Ettinger and Feldman, 2005). It can be a secondary symptom of cardiac, hepatic, renal and various systemic diseases in dogs (Ihedioha *et al.,* 2013) and also secondary to hypoalbuminemia and portal hypertension (Center, 2015).

The dogs presented to the Veterinary Clinical Complex, College of Veterinary Science, Tirupati with the clinical signs of abdominal distension, dyspnoea, exercise intolerance and limb oedema were screened. Physical examination findings were pyrexia, pale conjunctival mucus membrane, fluid thrill up on abdominal palpation. Imaging techniques like radiography, ultrasonography and echocardiography were used for evaluation. A total of 2948 dogs were bought to veterinary clinical complex, College of Veterinary Science, Tirupati during the study period from May 2024 to November 2024. Among them ascites was diagnosed in 28 dogs. Out of 28 dogs, 15 dogs had ascites due to hepatic origin, 4 dogs had ascites due to cardiac origin, 5 dogs had ascites due to mixed origin, 3 dogs had ascites due to neoplastic origin and 1 dog had ascites due to hypoproteinaemia.

Out of 23 dogs, in radiography ground glass appearance and loss of serosal details were observed in 21 dogs each (91.30%), floating intestines in 11 dogs (47.82%), gas filled intestines in 10 dogs (43.47%). Hepatomegaly with rounding of liver edge was observed in four dogs (17.39%), shrunken liver with irregular liver margins in two dogs (8.69%) and splenomegaly were recorded in three dogs (13.04%). The current findings align with the reports of Bhatti (2020). Radiographic examination of thorax revealed cardiomegaly and pericardial effusions in five dogs each (21.73%), globoid heart, elevated trachea and pleural effusions in four dogs each (17.39%) while consolidation of lungs and shrunken cranial lung lobe were observed in three dogs each (13.04%). Obscured cardiac silhouette, elevated carina, interstitial pattern of lung lobes were observed in two dogs each (8.69%) while mixed lung pattern and bronchial pattern was observed in one dog each (4.34%). Biatrial enlargement, right atrial enlargement was observed in three dogs each (13.04%) and left atrial enlargement was observed in two dogs (8.69%). These findings were consistent with the observations made by Kocaturk *et al*. (2016) and Bhatti (2020).

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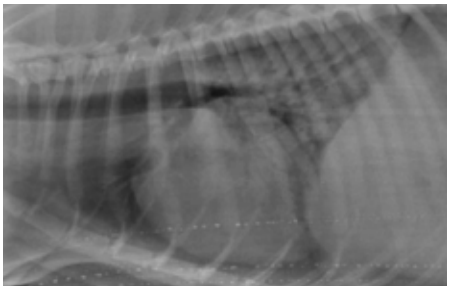
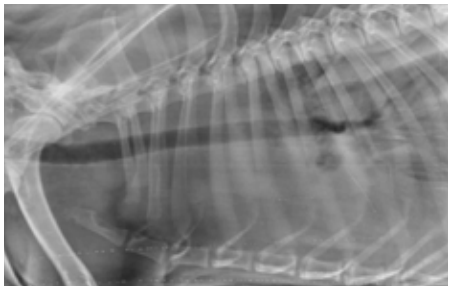
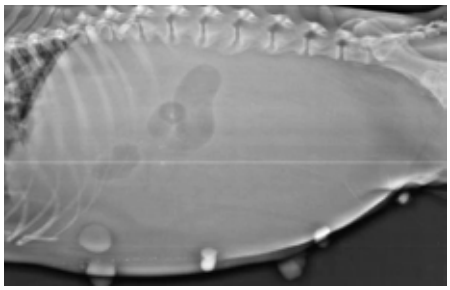


**Left lateral thorax radiograph -enlargement of the heart (VHS- 11.5)**



**Left lateral thorax radiograph- pleural effusion and pericardial effusion**



**Lateral abdominal radiograph showing classical ground glass appearance-ascites**

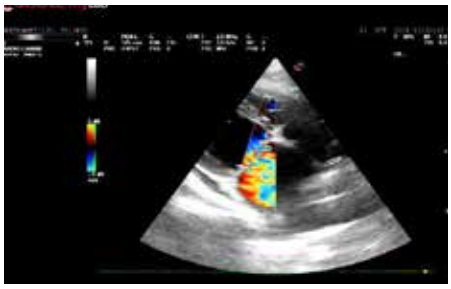
The abdominal ultrasound examination in these demonstrated the presence of anechoic peritoneal fluid in all the 28 cases. Hepatomegaly was observed in five dogs (17.85 %), and the liver parenchyma was hyperechoic, hypoechoic and mixed echogenic in 11 dogs (39.28%), one dog (3.57%) and four dogs (14.28%), respectively. The liver margins were irregular in four dogs which corresponds to 14.28 per cent of the ascites affected dogs and round edges of the liver were recorded in five dogs (17.85%). Engorged and distended hepatic vasculature and space occupying lesion was present in one dog each (3.57%). The results obtained align with the studies conducted by Gupta *et al*. (2020). Out of 23 dogs, mitral regurgitation, tricuspid regurgitation, left atrial enlargement, left ventricular enlargement was observed in six dogs, six dogs, seven dogs and two dogs, respectively. Similarly pericardial effusion was recorded in six cases (26.08%), pleural effusion, dilated cardio myopathy and congestive heart failure was recorded in two cases each (8.69%). The results obtained are in concurrence with the earlier research conducted by Bhatti (2020).

**Sonogram of abdomen depicting fibrin strands in the anechoic fluid**

**Hepatosongram depicting hepatomegaly and anechoic fluid in the abdominal cavity**

**Hyperechoic liver parenchyma with irregular margins in cirrhosis**

**Gall bladder with mucocele**



**Right parasternal long axis left ventricular outflow tract view**
**Left: Mitral valve regurgitation in a dog with ascites Right: Pericardial effusions**

**Left atrial enlargement (La/Ao=2.88)**

**Dilated cardiomyopathy in dogs with ascites (Right parasternal short axis view)**

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