ECHOCARDIOGRAPHIC DIAGNOSIS OF PERICARDIAL EFFUSION IN DOGS *

Pericardial effusion refers to the accumulation of abnormal amount of pericardial fluid. Rapid accumulation of fluid might result in drastic consequences like acute signs of right heart failure and tamponade. Such cases are usually characterized by rapid rise in intracardiac and jugular venous pressures, fall in cardiac output and blood flow from venacava to the heart during atrial diastole. The present paper deals with two cases of pericardial effusion in dogs.

A seven year old Spitz and a four year old Labrador were presented with the clinical signs like syncope (Spitz) and mild lethargy and exercise intolerance (Labrador). Slight distension of the jugular vein as well as poor pulse quality was observed in the latter. Heart sounds were muffled in both the cases. The animals were subjected to electrocardiography (ECG), radiography and echocardiography.

Electrocardiography revealed slightly diminished R – amplitude in both the cases, on the day of presentation; two weeks later electrical alternans was noted in the latter (Fig.1 & 2). Radiograph revealed the classic globoid cardiac silhouette (Fig.3). Echocardiography revealed anechoic areas around the ventricles in both the cases (Fig. 4). Based on the electrocardiographic, radiographic and echocardiographic findings, the cases were diagnosed as pericardial effusion.

In the present study, both the dogs were medium sized. One was a Spitz cross, weighing 16 kg and other was a Labrador weighing 34 kg concurring with the observations of Gibbs (1982), Berg (1984), Matteisen and Lammerding (1985) and Aronsohn and Carpenter (1999) who stated that idiopathic pericardial effusion was most often seen in medium to large breeds of dogs. The diseased dogs in this study were seven and four years of age respectively coinciding with the findings of Ware (2001) who observed that pericardial effusion were seen in dogs of any age, even though the median age was 6 to 7 years. Ware (2001) suggested that non-specific clinical signs like lethargy, weakness, exercise intolerance and loss of appetite might occur before developing obvious ascites in case of pericardial effusion, which were similar to the findings in this study. The clinical signs like poor pulse quality and venous distension agreed with the classical signs of the disease as described by Shaw and Rush (2007), who opined that the signs worsened as the ability of the pericardium to stretch got exceeded. Muffling of heart sounds due to the presence of fluid in the pericardial sac was observed in both the cases, which concurs with the opinion of Abbott (1998).

Ettinger and Suter (1970) opined that QRS complexes of diminished amplitude might be associated with pericardial effusion, which was observed in both the cases that were studied. Relatively diminished R – amplitudes in the ECG of dogs in the present study could be attributed to the attenuation of impulse conduction through the increased amount of pericardial fluid (Ristic, 2004). The classic globoid shadow in case of pericardial effusion reported by many workers (Ware, 2001; Shaw and Rush, 2007), was clearly seen in the radiograph in one case.

Echocardiography gives an idea about the rapidity with which the effusion has accumulated, hence may be considered as the

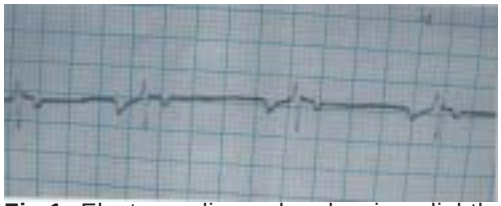

Fig.1. Electrocardiography showing slightly diminished R – amplitude

Fig.2. Electrocardiography showing electrical alternans

Fig.3 Radiograph showing the classic globoid cardiac silhouette

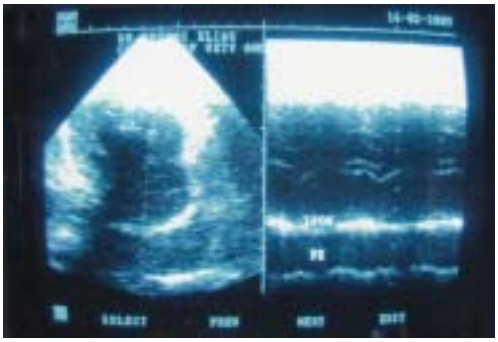

Fig.4. Echocardiography showing anechoic areas around the ventricles in both the cases

most sensitive and specific non – invasive diagnostic tool to detect the condition. Tajik (1977) opined that echocardiography had become established as the procedure of choice for the detection, confirmation and serial follow-up of patients with pericardial effusion. Similar suggestions were also made by Ware (2001) and DeFrancesco (2004). The effusion appeared as an anechoic or echo free space surrounding the ventricle, which can be correlated with the observations of Moise and Fox (1999) and Ware (2001). The author added that in cases with concurrent cardiac tamponade, collapse of both the atrium and ventricle on the right side, especially in the diastole, was observed to be a consistent feature. The technique is useful to detect as little as 15 ml of pericardial fluid.

Summary

Two cases of pericardial effusion in dogs and the usefulness of echocardiography in the diagnosis is discussed.

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Anju Eliz Ben[1] , Usha. N. Pillai[2] , S. Ajithkumar[3], K. D. John Martin[4] and P. C. Alex[5]

Department of Clinical Veterinary Medicine
College of Veterinary and Animal Sciences
Mannuthy-680 651, Thrissur, Kerala

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** Part of M.V.Sc. thesis submitted by the first author to the Kerala Agricultural University, Thrissur*

1. Teaching Assistant, Veterinary College, Shimoga
2. Associate Professor
3. Professor and Head
4. Associate Professor, Dept. of Veterinary Surgery and Radiology
5. Professor, CVAS, Pookode, Wayanad