DIAGNOSIS OF CARDIAC TAMPONADE ASSOCIATED WITH PERICARDIAL EFFUSION IN A GERMAN SHEPHERD DOG

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Introduction

Abnormal accumulation of fluid in the pericardial sac is referred to as pericardial effusion. The causes of pericardial effusion are many and varied. The important acquired causes are neoplasia, idiopathic pericardial effusion, congestive heart failure, left atrial rupture, constrictive and septic pericarditis (Olcott and Sleeper, 2010). Pericardial effusion can become life threatening if cardiac tamponade develops associated with impaired right heart filling. This report describes the diagnosis of cardiac tamponade associated with idiopathic pericardial effusion in a German Shepherd dog.

Case History

A ten year old female German Shepherd dog was referred to the Veterinary College Hospital, Mannuthy, with the history of exercise intolerance and weakness for the past ten days. The local veterinarian had treated it with vitamin and mineral supplements. As no improvement was noticed, referral was made.

Clinical Examination and Diagnosis

On examination, the animal appeared active with normal temperature. Mucus membrane was pale pink. Auscultation of the cardiac area revealed muffled heart sounds. Considering the age of the animal and muffling of heart sounds on auscultation, an electrocardiogram was recorded. Electrocardiogram (Lead II) revealed low amplitude R wave suggesting the presence of fluid (Fig.1). Lateral thoracic radiograph revealed an enlarged cardiac silhouette (Fig. 2). As pericardial effusion was suspected, an echocardiographic study was conducted to confirm the diagnosis. A 2-dimensional and M-mode echocardiographic study conducted revealed an anechoic area in the pericardial space suggestive of effusion and cardiac tamponade with diastolic right atrial and ventricular collapse (Fig.3). No specific cause of effusion like neoplasia could be identified and hence the case was diagnosed as cardiac tamponade associated with idiopathic pericardial effusion.

Fig. 1. Low amplitude R waves in ECG– Lead II (25 mm/s)

Fig.2. Enlarged cardiac silhouette – Lateral thoracic radiograph

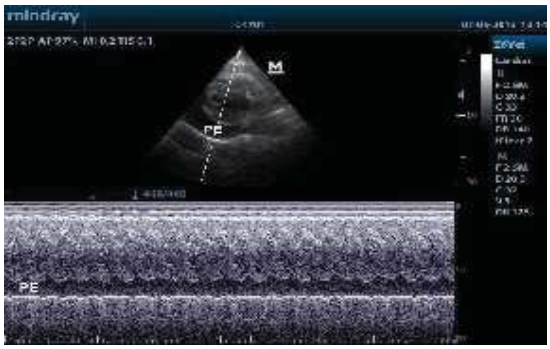

Fig. 3. Pericardial effusion and cardiac tamponade- 2- dimensional and M-mode echocardiogram, PE- Pericardial effusion

Discussion

Clinical signs of cardiac tamponade associated with pericardial effusion vary from case to case depending on the volume of fluid that accumulates. The clinical signs of weakness and exercise intolerance are consistent with cardiac disease. However, these clinical findings may be present in a variety of condition. Muffled heart sounds have been recorded in pericardial effusion owing to the presence of fluid (Adeyanju *et al*. 2012). Electrocardiographic changes of low amplitude R wave, with an average R amplitude of 0.6 mv recorded as in this case is associated with poor conduction to the electrodes. Electrical alterans, the variation in R amplitude, is another change in electrocardiogram which is often associated with pericardial effusion. However, such a change may not be seen in all cases (Jinks, 2001). Massive pericardial effusion resulted in the classic 'globoid cardiac shadow' or the 'basket ball heart' seen on both lateral and dorsoventral radiographs (Ware, 2000). A similar picture was appreciable in the present case on lateral radiograph. Echocardiographic findings confirmed pericardial effusion and tamponade. Tamponade develops when the normally sub-atmospheric intrapericardial pressure equilibrates with right atrial and right ventricular diastolic pressures and results in collapse of right atrial, right ventricular free wall or both (Kittleson and Kienle, 1998; Sisson and Thomas, 1999).

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