

Myxomatous Mitral Valve Disease in a German Shepherd Dog

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Abstract

A four-year-old male German Shepherd dog was presented to the Small Animal Clinics, GADVASU, with the primary complaint of exercise intolerance for the past 3-4 days and chronic weight loss. Physical examination revealed poor body condition and dull mentation, fever and tachycardia. Conjunctival mucous membranes and palpation of lymph nodes were normal. The animal was subjected to blood sampling, thoracic radiography, electrocardiography and echocardiography. Haemoglobin was 14.7g% and TLC was 13,900 cu mm, showing absolute neutrophilia. Thoracic radiography showed heart occupying 83% of chest in ventral-dorsal view, suggestive of cardiac enlargement. Electrocardiography revealed an extremely rapid rhythm with a heart rate of 300 beats per minute, indicating emergency condition. Echocardiography revealed left atrium and ventricle enlargement, along with mild flattening of mitral valve and mitral regurgitation. Values of Ao, LA and their ratio (LA/Ao) were 1.80, 4.99 and 2.72 respectively. Based on the findings, the case was diagnosed for Myxomatous Mitral Valve Disease. The dog was treated with digoxin 250mcg and diltiazem 45 mg twice a day for first two days to control arrhythmia. Further treatment was continued with tab pimobendan and enalapril at the dose of 5mg twice a day. The dog was telephonically reported to be stable after 14 days.

Keywords: MMVD; German Shepherd; echocardiography; arrhythmia; mitral regurgitation

Myxomatous mitral valve disease (MMVD) is a chronic degenerative disorder affecting the atrioventricular valves, most commonly the mitral valve complex (Olsen *et al.*, 2010). It is one of the most common acquired heart diseases in dogs. The disease may affect any breed but is often observed in small-breed dogs particularly Cavalier King Charles Spaniels (Keene *et al.*, 2019). The exact etiology of MMVD remains unknown; however, the marked breed predisposition suggests a genetic basis for the disease (Burchell *et al.*, 2014). This article present Myxomatous mitral valve disease in a German Shepherd dog.

A four-year intact male German shepherd dog was presented to Small Animal Clinics, GADVASU with a history of exercise intolerance and inappetence for the past 3-4 days. Progressive weight loss from past one month was also noted. The general physical examination revealed poor body condition and dull mentation. Conjunctival mucous membranes were pale pink. Rectal temperature was noted as 104°F. The patient had arrhythmia and tachycardia on heart auscultation. Peripheral lymph nodes were normal on palpation. The animal was subjected to thoracic radiography in right lateral view and ventrodorsal view. Radiography

showed a globoid heart with cardiothoracic ratio > 83% along with VHS as 11 and sternal contact as 2.5 ICS (Fig 1.1 & 1.2)

Haematological findings revealed haemoglobin of 14.7g% and absolute neutrophilia. Electrocardiography showed heart rate of 300bpm, P waves were not associated with QRS complexes, and wide, bizarre QRS complexes were present. All the observations were suggestive of Ventricular Tachycardia (Fig 2).

2D echocardiography revealed enlargement of the left atrium and left ventricle, and mild flattening of mitral valves. Mitral valve regurgitation was also observed on colour doppler imaging. M-mode echocardiography revealed LA/Ao (Fig 3.2) was 2.72. The ejection fraction was 55.5%, and fractional shortening was 20.34%.

The dog was managed for ventricular tachycardia by digoxin (250 mcg bid) and diltiazem (45 mg bid) for 3 days initially. Further, treatment was continued with pimobendan (5mg bid) and enalapril (5 mg bid) for 15 days. Improvement in exercise intolerance and lethargy was reported telephonically after 15 days of treatment.

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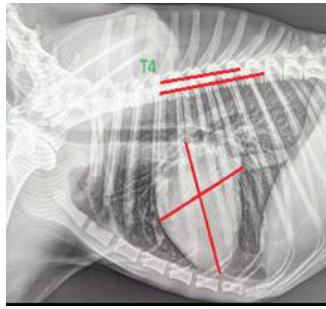


Fig 1.1

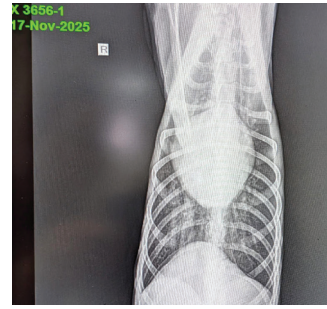


Fig 1.2

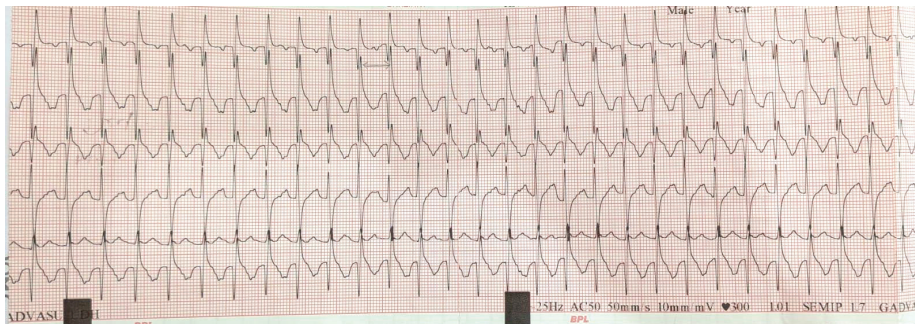


Fig 2

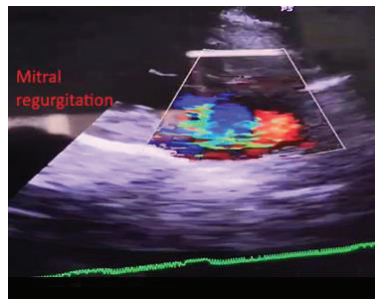


Fig 3.1

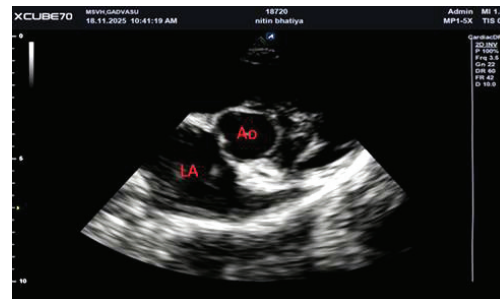


Fig 3.2

Degenerative mitral valve disease represents the predominant acquired cardiac disorder affecting elderly small-breed dogs. (Menciotti & Borgarelli, 2017) however, unlike typical cases, a 4-year-old large-breed German Shepherd dog was diagnosed with the condition highlighting that MMVD can also occur in young to middle age large breed dogs. Although arrhythmias are not a routine feature of myxomatous mitral valve disease (MMVD), their presence in large-breed dogs is of particular clinical significance. They may indicate more advanced myocardial involvement and are often associated with accelerated disease progression, which is consistent with the generally poorer prognosis observed in large breeds (Atkins *et al.*, 2009) While MMVD in large-breed dogs is typically associated with faster progression and a higher risk of developing

decompensated congestive heart failure, prognosis is not determined by breed alone. Factors such as the stage of disease at diagnosis, the extent of cardiac remodeling, and the response to medical therapy play crucial roles in determining outcome. The favourable recovery observed in this case may therefore be attributed to early diagnosis and timely initiation of appropriate therapeutic management prior to the onset of advanced congestive heart failure

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