Indian J. Vet. Med. Vol. 41, No. 2, 2021 pp. 62-65

Diagnosis and Clinical Management of Pericardial Effusion in a German shepherd Bitch - A case report

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Abstract

A 14 months old and 22 kg German shepherd bitch was presented to the Veterinary Medicine unit of the Referral Veterinary Polyclinic and Teaching Veterinary Clinical Complex of Indian Veterinary Research Institute, Izatnagar, Bareilly with the history and clinical signs of dyspnoea, open mouth breathing, vomiting, black faeces, anorexia since one week, polydypsia, having previous vaccination and deworming history, pale mucous membrane, 101.9°F rectal temperature, 157/minute pulse rate, 64/minute respiration rate and oedema at abdominal region. The present case was diagnosed as pericardial effusion on the basis of hemato-biochemical examination, presence of excessive amount of free abdominal fluid through ultrasonography, absence of P-wave and low QRS voltage through electrocardiography and presence of fluid thrills in pericardial sac with heart floating and showing aberrant movement in large pericardial cradle through echocardiography. The bitch was treated with antibiotic along with supportive therapy for five days and there was marked improvement in its condition.

Keywords: Pericardial effusion, Ultrasonography, Electrocardiography, Echocardiography

Pericardial effusion is a common acquired heart disease in dogs (MacDonald, 2009). It is characterized by an abnormal accumulation of fluid within the pericardial sac and considered a cardiac emergency situation that is most commonly seen in canine patients (Scislowicz, 2015). Its causes include neoplasia (Sisson *et al.,*1984, Wykes *et al.,* 1986, Kirsch *et al.,* 2000), idiopathic causes (Gibbs *et al.,* 1982; Berg *et al.,* 1984; Aronsohn and Carpenter, 1999; Stepien *et al.,* 2000), peritoneopericardial diaphragmatic hernia (Weitz and Tilley, 1978), pericardial cysts (Marion *et al.,* 1970), infection (Font *et al.,* 1993; Aronson and Gregory, 1995), chronic uraemia (Madewell and Norrdin, 1975), trauma (Berg and Wingfield, 1984) and primary cardiac disease (Berg, 1994). When effusion accumulates quickly or intrapericardial pressure rises quickly, intrapericardial pressure surpasses the normal diastolic pressure in the right ventricle and cardiac tamponade occurs (Shaw and Rush, 2007).

Case history, Observations and Treatment

A 14 months old, 22 kg German shepherd bitch was presented to the Veterinary Medicine unit of the Referral Veterinary Polyclinic and Teaching Veterinary Clinical Complex of Indian Veterinary Research Institute, Izatnagar, Bareilly. The most common history and clinical signs were dyspnoea, open mouth breathing, vomiting, black faeces, anorexia since one week, polydypsia with previous vaccination and deworming, pale mucous membrane, 101.9°F rectal temperature, 157/minute pulse rate, 64/minute respiration rate and oedema at abdominal region.

After clinical examination, blood samples were collected from Jugular vein aseptically in vacutainers with and without anticoagulant for haematological and serum biochemical analyses as per standard procedure. Ultrasonography, electrocardiography and echocardiography were also performed simultaneously. Hematological examination revealed decrease in hemoglobin concentration, total erythrocyte count and lymphocyte count and slightly increased in neutrophils while other parameters were within the normal range

Table 1: Hematological parameters

Parameter	Value	Normal Range
Hemoglobin (g/dL)	7.2	11.9-18.9
T.E.C. (Million/mm^3)	2.75	4.95-7.87
T.L.C. ($10^3/mm^3$)	13.95	5.0-14.1
D.L.C.		
Neutrophils %	88	58-85
Lymphocytes %	06	08-21
Monocytes %	06	02-10
Hemoprotozoa	Negative	-

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Fig.1: Ultrasonography

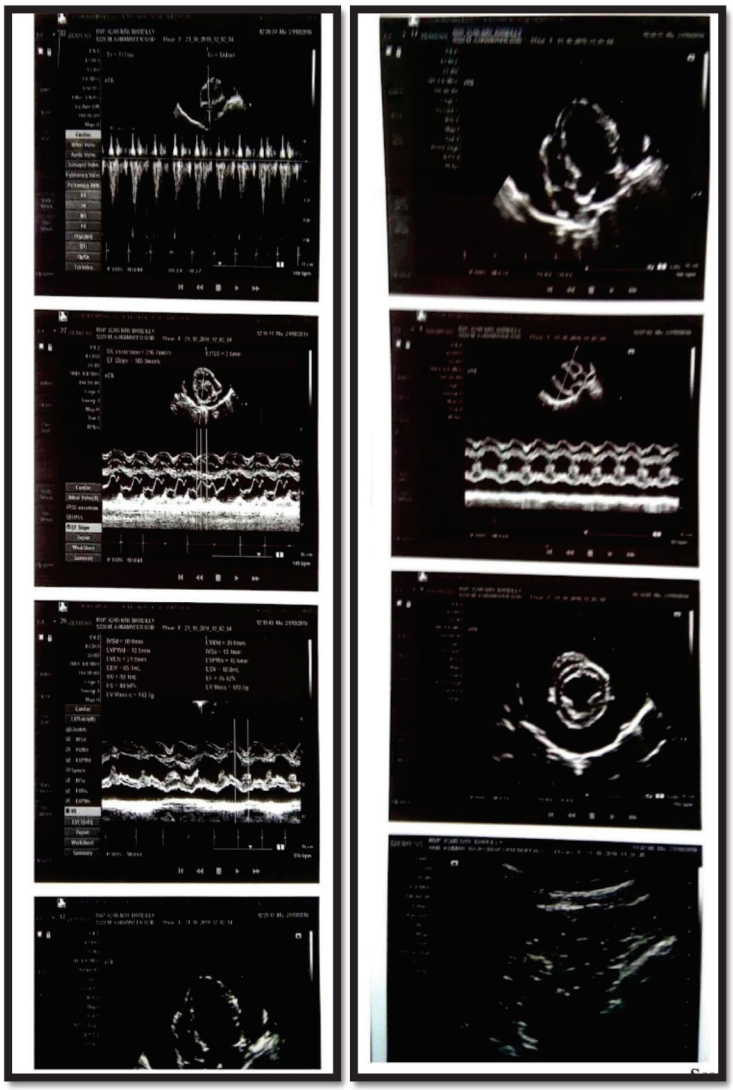

Fig.3: Echocardiography

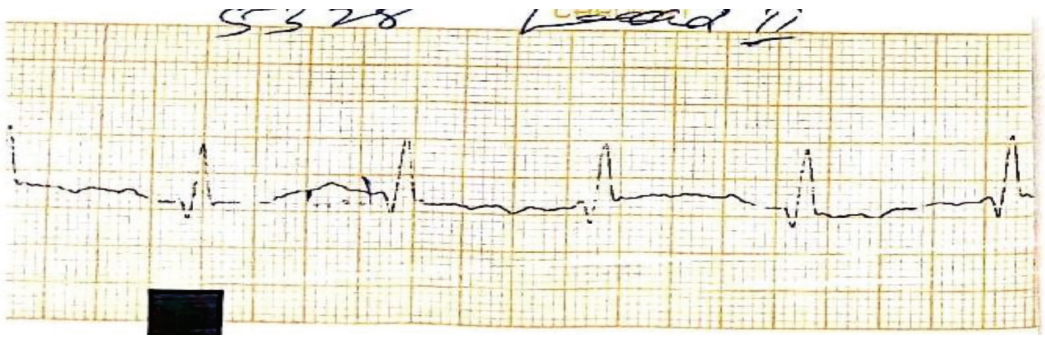

Fig. 2: Electrocardiography

Table 2: Serum Biochemical parameters

Parameter	Value	Normal range
BUN (mg/dL)	61	12-25
Creatinine (mg/dL)	0.8	0.5-1.5
S.G.O.T. (IU/L)	56	10-88
S.G.P.T (IU/L)	202	10-88
ALKP (IU/L)	250	20-150
Total Protein (g/dL)	6.2	5.4-7.7
Albumin (g/dL)	2.5	2.3-3.8
Globulin (g/dL)	3.7	2.3-5.2
A:G	0.68	0.4-1.6
Na^+ (mmol/L)	141	135-148
K^+ (mmol/L)	3.8	3.5-5.3

(Table-1). Serum biochemical examination revealed increased in blood urea nitrogen, serum glutamic pyruvic transaminase and serum alkaline phosphatase levels while other parameters were within the normal range (Table-2). Ultrasonographic examination revealed presence of excessive amount of free abdominal fluid (Fig.1), electrocardiography revealed absence of P-wave and low QRS voltage (Fig. 2) while echocardiography revealed fluid thrills in pericardial sac with heart floating and showing aberrant movement in large pericardial cradle (Fig. 3).

On the basis of above findings, the present case was diagnosed as pericardial effusion. Treatment was started with Inj. 25% Dextrose @ 4 mL/kg b.wt. Intravenously, Inj. 5% Dextrose @ 2 mL/kg b.wt. intravenously, Inj. Frusemide (Lasix) @ 2-4 mg/kg b. wt. intravenously, Inj. Pentowok (Pantoprazole) @ 0.5-1.5 mg/kg b.wt. intravenously, Inj. Deriphyllin @ 6-11 mg/kg b.wt. intramuscularly, Inj. Amoxirum fort @ 10-20 mg/kg b.wt mg/kg b.wt. Intravenously, Inj. Envit: 2 mL Intravenously, Inj. Eldervit-12: 2 mL Intravenously and continued for five days. After treatment, the bitch showed marked improvement in its condition and returned to its normalcy.

Discussion

The tumour mass is not visible on echocardiography in the present study (Stepien *et al.,* 2000; Johnson *et al.,* 2004). The echocardiography is quite insensitive to diagnose the pericardial effusion caused by the tumour mass such as mesothelioma as reported by Stepien *et al.,* 2000), inability to differentiating the fibrinous pericardial thickening and pericardial mass lesions as reported by Sanflippo and Weyman, 1994 and the timing of echocardiographic examination in the course of disease process as reported by Cobb and Brownlie, 1992. In this study, fibrinous pericardial thickening was not detected. The idiopathic pericardial effusion is characterized by the absence of tumour and absence of confirmed infectious agent in the effusion (Dunning, 2002). Echocardiography is considered a sensitive and specific tool for detection of even a small quantity of fluid in pericardial sac (Miller and Sisson, 2000).

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Received : 15.05.2021
Accepted : 20.10.2021