

Successful management of ventricular premature contractions in a dog with combination therapy of mexiletine and sotalol

A. K. Daniel¹, V. P. David^{1*}, O. K. Sindhu¹ and N. Madhavan Unny¹

¹Department of Veterinary Clinical Medicine, Ethics and Jurisprudence, College of Veterinary and Animal Sciences, Pookode, Wayanad- 673 576, Kerala, India

Abstract

A nine-year-old female Cocker Spaniel dog was presented to the Teaching Veterinary Clinical Complex, Pookode with clinical signs of anorexia, shivering, weakness and exercise intolerance. Dyspnoea and pulse deficit were observed on general clinical examination. Cardiac auscultation revealed arrhythmia. On electrocardiography examination, monomorphic ventricular premature complexes and ST segment coving were observed. The animal was treated with mexiletine tablets at 4 mg per kg body weight and sotalol at 0.5 mg per kg body weight orally. The animal showed marked improvement in clinical signs by one month.

Keywords: Arrhythmia, Mexiletine-sotalol combination, Ventricular premature contraction

Highlights

- Oral combination therapy using mexiletine at 4 mg per kg body weight and sotalol at 0.5 mg per kg body weight is an effective therapy for long-term management of VPCs.

A nine-year-old female Cocker Spaniel dog was reported to the Teaching Veterinary Clinical Complex, CV&AS, Pookode with a complaint of anorexia, shivering, weakness and exercise intolerance. The animal was properly vaccinated and dewormed.

The dog was dull and depressed with a body temperature of 101.2°F and pale conjunctival mucus membrane. On clinical examination, dyspnoea and pulse deficit were observed (Fig. 1). Cardiac auscultation revealed arrhythmia. Monomorphic ventricular premature complexes and ST segment coving could be identified on electrocardiography (Fig. 2). Regularly irregular rhythm with a heart rate of 100 bpm was also observed in electrocardiography.

The animal was treated with mexiletine (Tab Mexohar 150 mg, Cipla) at 4 mg per kg body weight and sotalol (Tab Sotalar 40 mg, Cipla) at 0.5 mg per kg body weight orally. Supportive therapy with Cardio support (L-Carnitine Tartrate, Taurine, Coenzyme Q10 and Vitamin E) as one tablet once daily was advised for one

month. The animal showed marked improvement in clinical signs and electrocardiography during a review after one month (Fig. 3), and the owner was advised to continue the same therapy for one more month.

A ventricular premature contraction (VPC) takes place when an aberrant electrical impulse arises within the ventricle. These aberrant impulses cause the ventricles to prematurely contract before the chamber is filled with blood, which may result in a reduction in the amount of blood flowing through the body (Calvert and Brown, 2004). VPCs can happen in clusters of two or three beats or as sporadic single beats. In more serious circumstances, it may be persistent and result in life-threatening arrhythmia called ventricular tachycardia (VT) (Spier and Meurs, 2004). Both arrhythmogenic right ventricular cardiomyopathy or dilated cardiomyopathy have early indicators in the form of VPCs (Sesha *et al.*, 2022). The severity of the arrhythmia and the underlying disease process will largely determine the course of treatment. Intravenous

*Corresponding Author, E-mail: vinu@kvasu.ac.in

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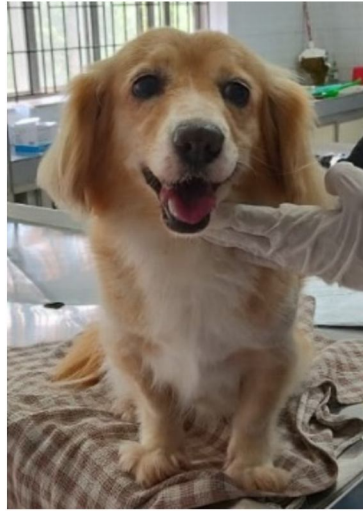


Fig. 1. Dog with dyspnoea

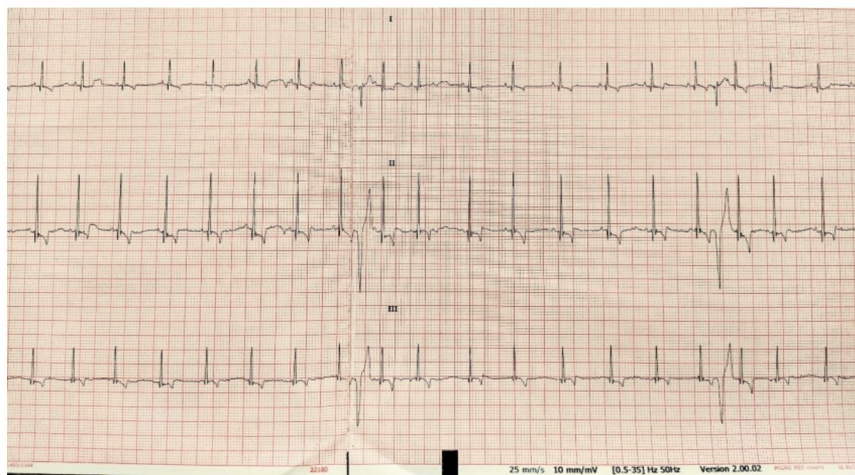


Fig. 2. ECG showing VPC (a) and ST segment coving (b) in Lead II

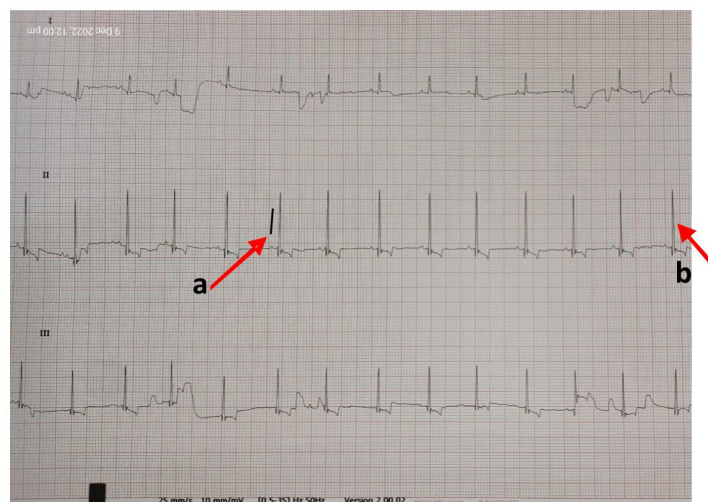


Fig. 3. ECG after one month of treatment

antiarrhythmic therapy may be necessary for severe ventricular arrhythmia to control the arrhythmia (Prosek *et al.*, 2006). Oral medicines may be administered once the arrhythmia is under control. An oral class III medication called sotalol has nonselective beta-blocking action. For the treatment of canine ventricular arrhythmias, it can be used with mexiletine, a sodium channel blocker that shuts down sodium channels in cardiac myocytes and nerve cells (Wess and Torti, 2018).

Ventricular arrhythmias can lead to hypotension and destruction of cardiac muscle tissue. It may become electrically unstable and degenerate to fatal ventricular fibrillation also.

Most often, lidocaine is used to treat ventricular arrhythmias immediately. It is perfect for acute treatment because it is efficient and safe with a quick onset of action, but has a short half-life. Hence, oral combination therapy using mexiletine and sotalol is an effective therapy for long-term management of VPCs in dogs.

Conflict of interest: Authors have no conflict of interest in this study.

Author's contributions: AKD: Data collection and analysis; VPD and OKS: Supervised the research work; NMU: Contributed to the implementation of the research.

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