



Diagnostic Forum

ECG Quiz

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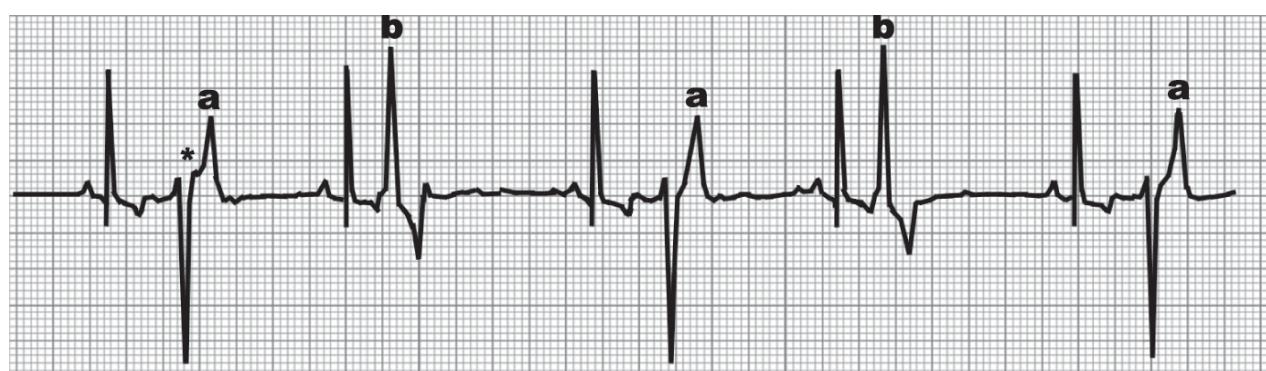
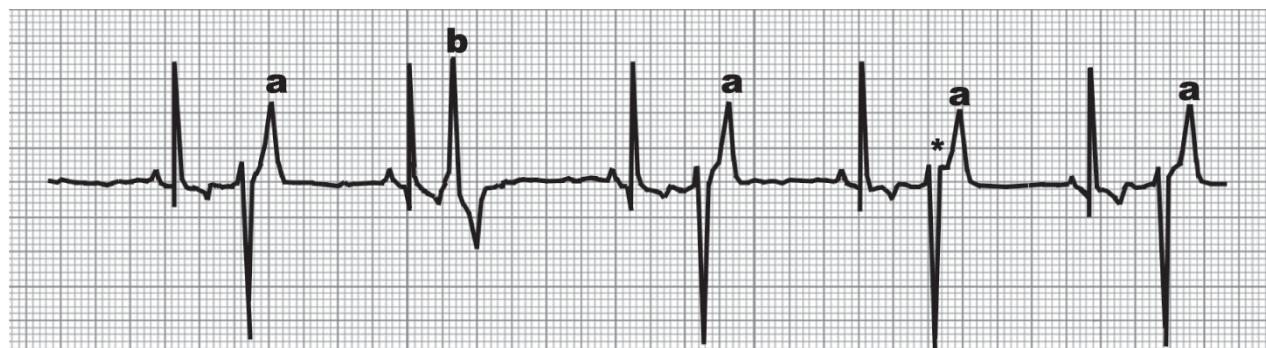
These lead II ECG strips were recorded from a 11 year old, spayed female, American Cocker Spaniel, weighing 14 kg that was referred to the Chulalongkorn University small animal hospital with a chronic non-productive cough. Clinical examination revealed pink mucous membranes with a capillary refilling time of 1-2 sec and a grade

II systolic heart murmur. A thoracic radiograph showed whole heart enlargement and an elevated trachea. Serum chemistry showed a mild degree of azotemia. The dog was given enalapril and diltiazem for treatment.

Please answer before turning to the next page.

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**Sinus rhythm with two ventricular bigeminy patterns**

The heart rate is approximately 90 beats/min. Ventricular bigeminy is a rhythm characterized by a ventricular premature complex (VPC) alternating with a sinus complex. A regular alternating pattern with a constant duration suggests re-entry as the mechanism for this arrhythmia. It is noted that there were two different ectopic foci originating from the ventricular origins (a and b). The durations between the sinus complexes and these two origins were different, with one shorter than the other. The shapes of both VPCs were bizarre and

different from the sinus complex and with longer duration. The premature beat causes the ventricle to contract before the chamber has had time to adequately fill with blood. This may cause the blood pressure to drop during arrhythmia. Some independent P waves are superimposed on the T waves of VPCs (star). The causes of bigeminy can be due to heart failure, digoxin toxicity or electrolyte imbalance. A calcium channel blocker, was given and the follow up ECG below showed less ventricular bigeminy with improved clinical signs.

