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## ECG Ouiz

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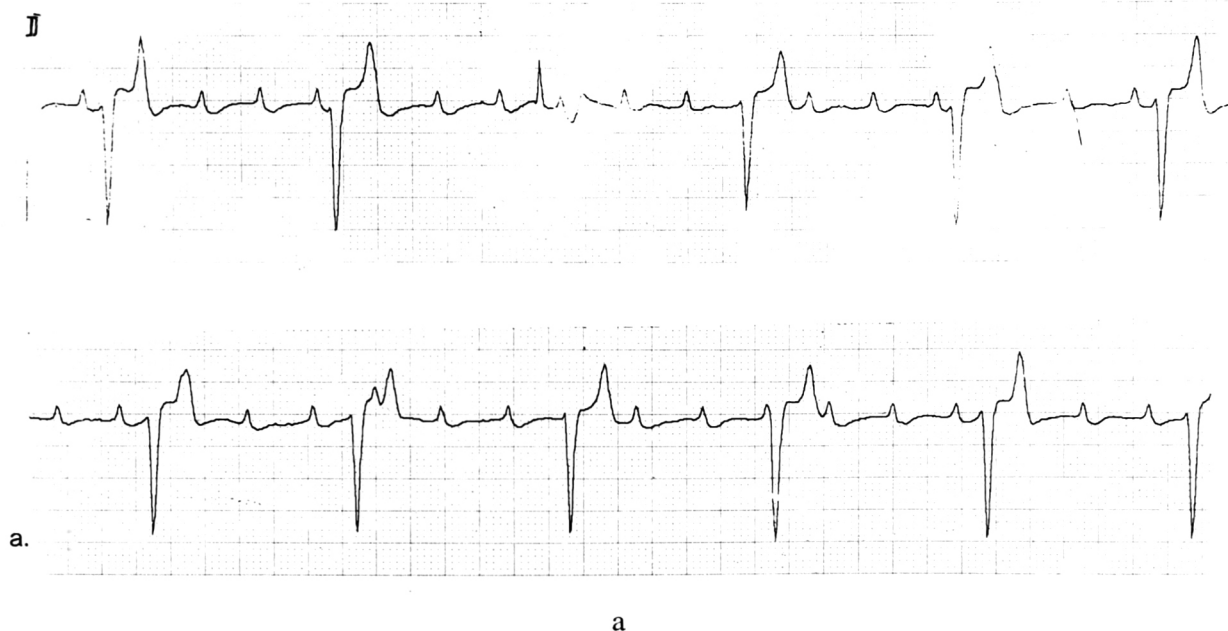
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## ECG Quiz

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These complex electrocardiograph (ECG) lead II strips were recorded from a 12-year-old female German Shepherd with a history of exercise intolerance, panting and depression. Physical examination revealed a soft tissue mass in the area of left axilla.

Crackling in the lungs and pulse deficit were also found. The thoracic radiograph showed right atrial enlargement with pulmonary congestion. A test for *Dirofilaria immitis* (SNAP<sup>R</sup>) was negative and the serum showed normal biochemical profiles.

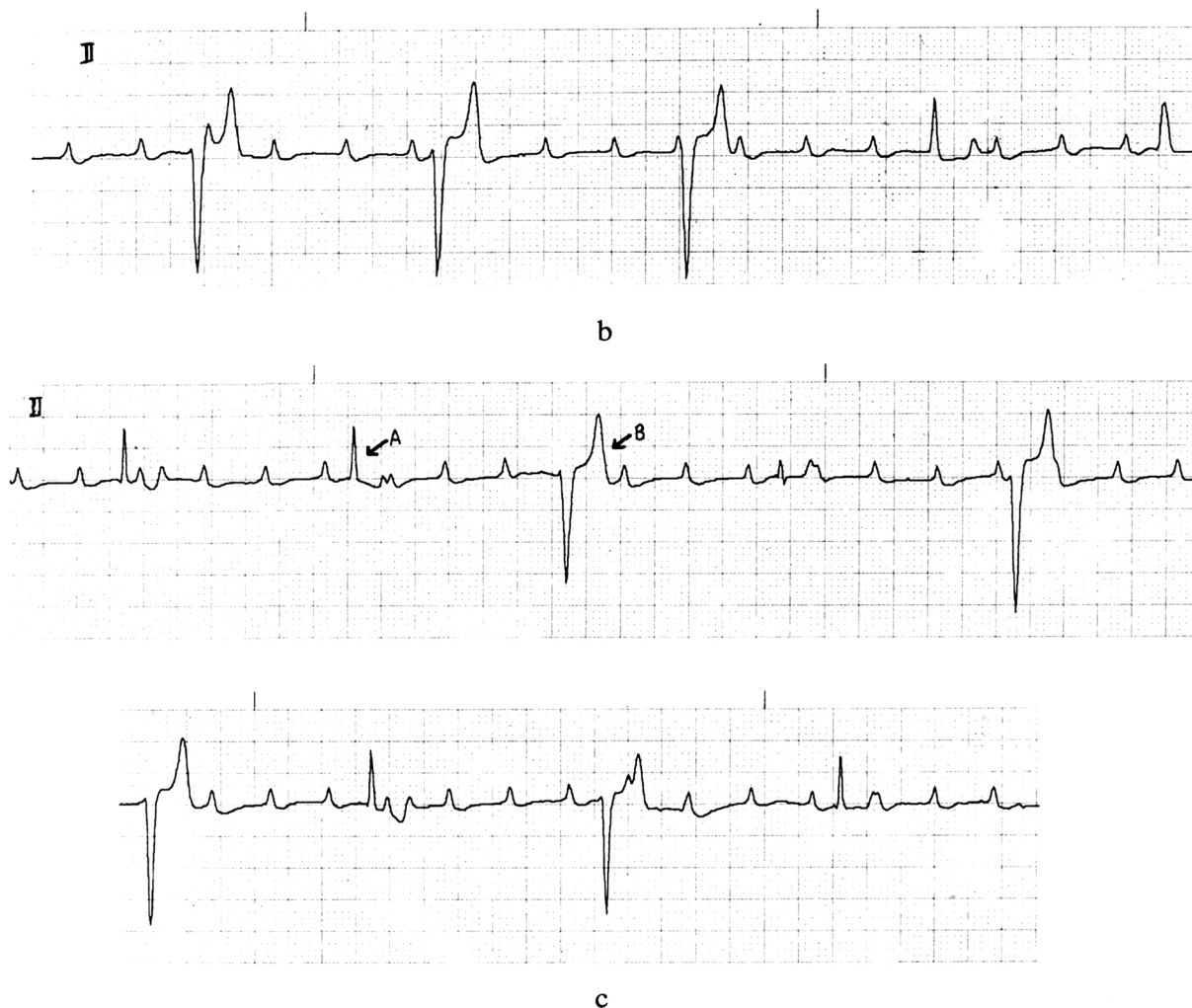


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The three ECG lead II strips were recorded (speed 25 mm/sec.) during a. The dog first admittance to the small animal hospital, b. After atropine treatment, c. After procainamide and atropine treatment.

|             |                      |
|-------------|----------------------|
| P wave      | 0.5 mV, 0.06 sec     |
| QRS complex | 1.6 mV               |
| MEA         | +90° (Frontal plane) |

Please make your interpretation before turning to the next page.

## **Answer**

### **Complete AV block**

During the first recording, the atrial rate is 100 beats/minute and the ventricular rate is 49 beats/minute. A complete AV block is shown by the P waves occurring at intervals independent of the slow ventricular escape rhythm. It is noted that the location of the AV block could be the AV node or The Bundle of His.

The underlying causes of AV block are idiopathic fibrosis of AV conducting tissue, hypertrophic cardiomyopathy, bacterial endocarditis, myocardial infarction and congenital defect. Hypertrophic cardiomyopathy

can be ruled out by echocardiography. Jugular venous pulsation and a variable intensity of the first heart sound are also commonly found.

For dogs that have clinical symptoms, the implantation of a temporary or permanent cardiac pacemaker is the best approach. An increase in ventricular rate may be encouraged by using isoproterenol and dobutamine which stimulate the adrenergic nervous system. The complete AV block may not respond to the vagolytic drugs, atropine and procainamide as is shown by the consistent ventricular rate (49, 46 and 50 beats/minute) in ECG strips I, II and III. However, junctional escape beats (A) are also present along with the ventricular escape beats (B).