# ECG Quiz

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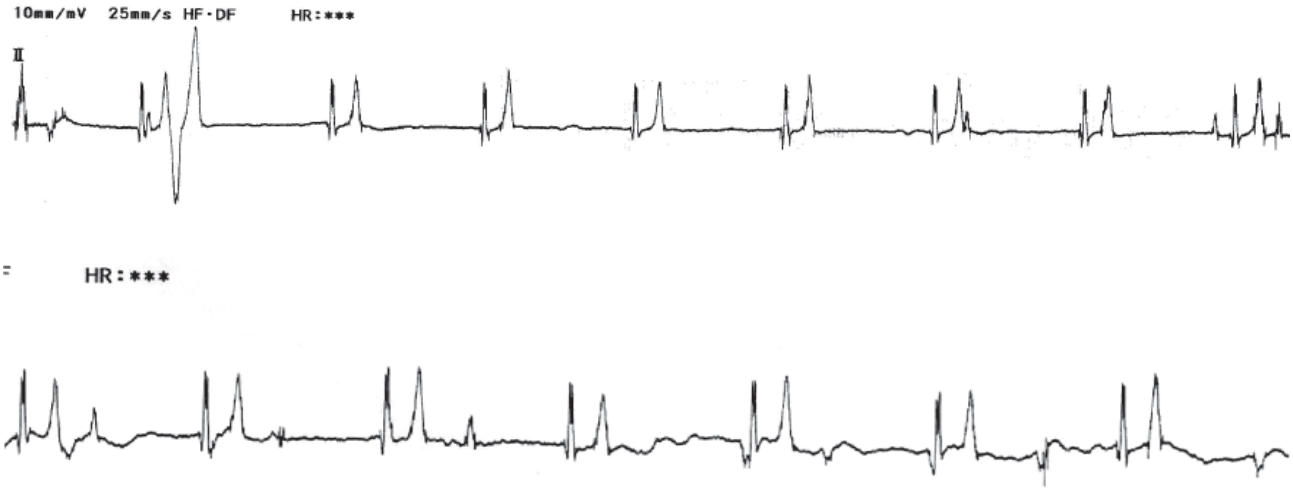


These lead II ECG strips were recorded from a 14 years old, castrated male, mixed breed dog, weighing 13.6 kg. The dog had non-productive cough, pale pink mucous membrane and normal appetite. Thoracic radiograph revealed whole heart enlargement especially left atrium, elevated trachea and main stem bronchi with normal lung field.

Please answer before turning to the next page.

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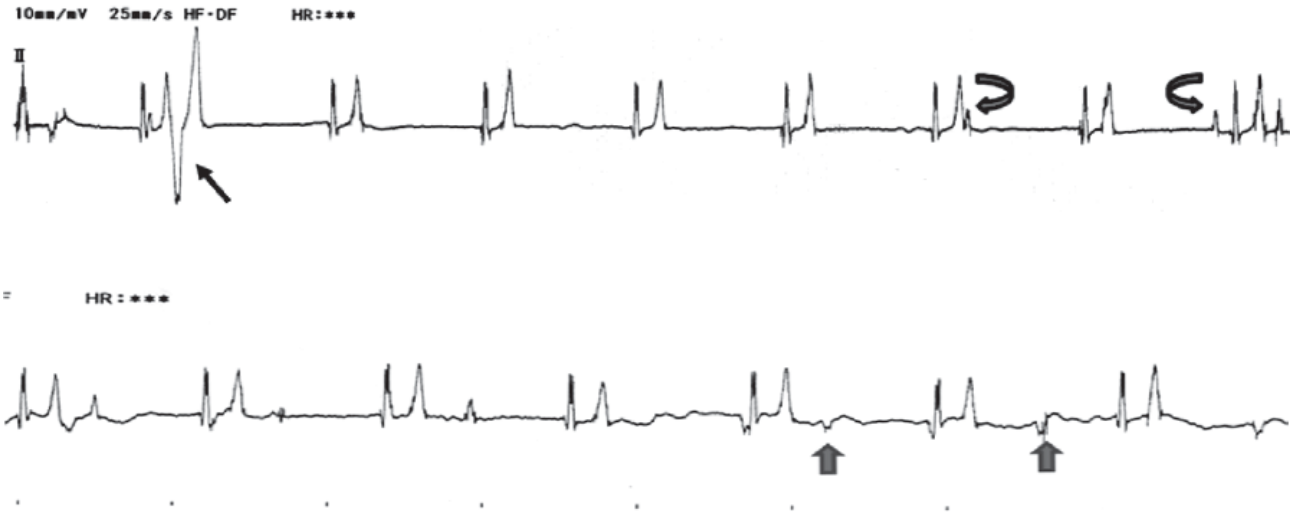
## Interpretation




**The atrioventricular dissociation with junctional escape rhythm**

Heart rate is approximately 45 beats per minute. The QRS complexes were regular in rhythm with slow rate. Please notice that the QRS complexes occurred without preceded P wave suggested that the QRS complexes may be originated from the atrioventricular node (AV) node or tissues nearby. The escape rhythm represents a safety or rescuing mechanism that operates when normal pacemaker stops pacing. The negative P waves in junctional complexes may precede, be superimposed on or follow the QRS complex (arrows in 2nd strip). The rhythm of 45 beats per minute is corresponding to the pacemaker rhythm of AV node. On the first ECG strip, one premature ventricular complex was seen right after the regular junctional AV complex (straight arrow). The positive P waves can also be seen at the end of the strip (curve arrow). These positive P waves may emerge periodically from sinoatrial node which cannot function properly while these impulses do not conduct through the AV node. The SA arrest with blocking normal AV transmission suggests the disease affected the normal natural pacemaker. The normal beats are overridden by ectopic rhythm which emerges near the AV node and possibly passing through normal Bundle of His. Therefore, the shape and duration of QRS are normal. The atropine challenge test is suggested in this case to demonstrate the rate and AV transmission of the impulses originated from SA node. The cardiac output in this dog may be adequate but frequent monitoring is important. If the disease is more advanced, an insufficient flow may occur and the animal may need an advanced treatment such as artificial pacemaker.