

## ECG Quiz

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This lead II ECG strip was recorded from a 10 year-old, male, mixed breed dog weighing 20 kg, with a history of anorexia, weakness, vomiting and depression. Physical examination revealed a high body temperature (103°F) and pale mucous membranes. Blood chemistry profiles revealed an abnormally high SGPT level. A complete blood

count showed a slightly high white blood cell count, increased band cells (1,260 cells/mm<sup>3</sup>) and lymphopenia (1,120 cells/mm<sup>3</sup>). The dog was treated with fluid therapy, antibiotics and a liver tonic.

Please make your interpretation before turning to the next page.

### **Accelerated idioventricular rhythm**

This is a non-paroxysmal ventricular tachycardia(VT) caused by accelerated idioventricular rhythm. The basic rhythm is a sinus arrhythmia. As the sinus slows below the rate of diastolic depolarization of the accelerated ventricular ectopic pacemaker, the ventricular pacemaker takes over until the sinus goes into its accelerated phase. Fusion beats are often produced as the ventricular tachycardia is going in and coming out. Please note that three beats before VT appear to have different shapes which do not resemble the sinus or VT. The first and second beats were similar to the sinus, with smaller QRS complexes, while the third complex is a fusion beat that looks like VT but smaller. For VT, some P waves were seen in the ST segment. This occurs too early to be conducted and the Ventricular Premature Contractions(VPCs) follow shortly after, capturing the entire ventricle and producing a classical morphology. The beat before classical VPCs has a

sinus beat occurring at about the same time but this one transmits the impulse which fused with the VPC altering its morphology. The two beats in front are those that conduct faster and reach the ventricle just after the VPC is triggered. So, the degree of fusion is slight and the QRS resembles the sinus beat. The slowing of the sinus beat before and the accelerated of the sinus beat at the end of VT is evident. If the sinus node is accelerated, it will abolish VT. This transition between sinus and ventricular beats occurs abruptly but is not considered paroxysmal, since the heart rate did not change.

This type of ventricular arrhythmia is associated with trauma, gastric dilatation and splenic tumors. They are usually not serious and terminate when the patient recovers from the triggering abnormality. It is thus unnecessary to treat with any antiarrhythmic drugs if the heart rate is not too fast(<160 beats/min).