

11 • Some additional arrhythmias

Ventricular pre-excitation

This occurs when the impulse from the SA node bypasses the AV node through an accessory conduction pathway to the ventricles and therefore depolarises the ventricles prematurely. The impulse conducted through the accessory pathway stimulates a portion of the ventricles with the rest of the ventricles being activated in the normal sequence through the AV node. There are believed to be three accessory pathways: bundles of Kent, James fibres and Mahaim fibres.

The **Wolff–Parkinson–White** (WPW) syndrome consists of ventricular pre-excitation with episodes of paroxysmal supraventricular tachycardia.

The heart rhythm (except with WPW syndrome) is unaffected and is usually regular.

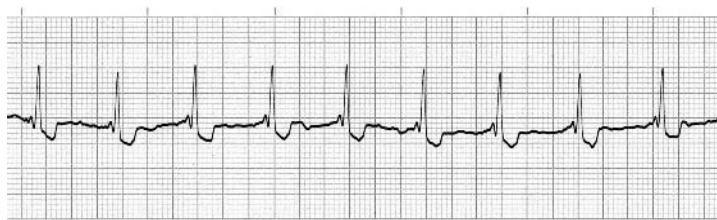


Figure 11.1 (a) ECG from a 3-year-old Labrador with pre-excitation. Note the abnormally short PR interval (25 mm/sec and 10 mm/mV).

ECG characteristics

The electrocardiographic characteristics are within the P–QRS–T complex itself. There is a short PR interval, a slur or notch (delta wave) in the upstroke of the R wave and a slight prolongation of the QRS complex (Fig. 11.1). In WPW syndrome the supraventricular tachycardia is often in excess of 300/min.

Clinical findings

If examined during a period of tachycardia, this will be heard and weak femoral pulses appreciated. If there is not a tachycardia present, the pre-excitation will not produce an audible difference from that of a normal sinus complex.

Atrial flutter

This is a rare arrhythmia in dogs and it has not been documented in cats.

ECG characteristics

The flutter waves (F waves) produce regular ‘saw-toothed’ deflections typically at a rate of 300–400/min, if seen. The ventricular response is typically to produce a supraventricular tachycardia (this

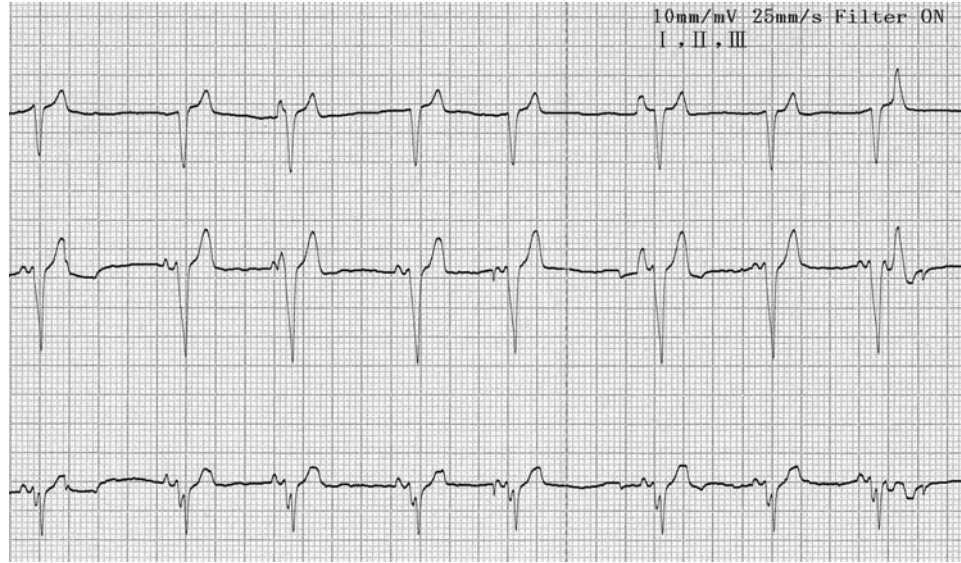


Figure 11.1 (b) ECG from a 4-year-old Boxer with pre-excitation. Note the short PR interval and the aberrant ventricular conduction with a right bundle branch morphology (25 mm/sec and 10 mm/mV).

is thus another potential cause of SVT). At high rates there may be a functional AV block thus producing a 2:1 or 3:1 conduction ratio (Fig. 11.2). If the ventricular response rate is a regular rate the heart

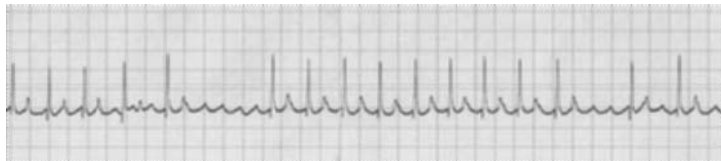


Figure 11.2 ECG from a 1-year-old Boxer dog with atrial flutter. Note the flutter waves and the variable capture rate, most of the time it is 2:1 (25 mm/sec and 10 mm/mV).

rate will be regular, however often the conduction can be variable, producing an irregular heart rate (similar to atrial fibrillation).

Clinical findings

The heart rate is typically very fast and can be regular or irregular.

Accelerated idioventricular rhythm

This is an ectopic ventricular rhythm that is often not particularly fast (<180/min) and thus sometimes is described as a slow ventricular tachycardia (VT).



Figure 11.3 ECG from an Old English Shepherd dog with pancreatitis and an idioventricular rhythm at 130/min (too slow to be considered a ventricular tachycardia, cf. Fig. 5.7, p. 28–29) (25 mm/sec and 10 mm/mV).

ECG characteristics

It looks like a slow VT (Fig. 11.3).

Clinical findings

The heart rate is typically regular to match to the rate, however the rhythm may be irregular if not constant and intermingled with the underlying sinus rhythm.