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## ECG Quiz

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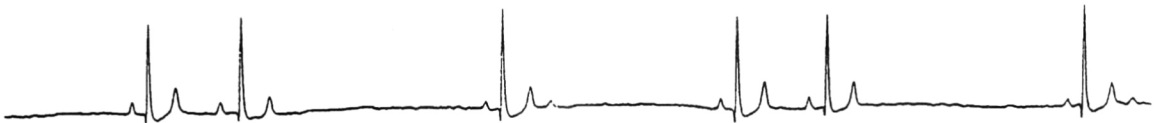
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## ECG Quiz

**Chollada Buranakarl\* Kris Angkanaporn\* Phiwipa Kamonrat\*\***



This complex lead II strip was recorded from a 12 year-old male Poodle weighing 4.7 kg with a history of chronic coughing and tachypnea. The dog was continuously received Heartguard® to control heartworm infection. One month prior to this ECG recording, the dog showed signs of dyspnea and was received bronchodilator, Ventolin® with O<sub>2</sub> therapy intermittently. Digoxin, enalapril and diuretic were also given to the dog half a month earlier for a weeks earlier for a period of one week but all drugs were paused since vomiting and diarrhea later on. The thoracic radiograph

showed the dog had whole heart enlargement with slightly enlarged pulmonary artery. The trachea was elevated and there was a partial collapse at the bifurcation of bronchi. The ECG results are as follow;

Heart rate = 40 beats/minute

P duration = 0.05 sec Height = 0.2 mV

P-R interval = 0.1 sec

QRS duration = 0.07 sec Height = 1.5 mV

QT interval = 0.26 sec

Mean electrical axis (frontal plane) = + 45 °

Please make your interpretation before turning to the next page.

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**Sinoatrial block**

There was a bradycardia with heart rate is only 40 beats/minute. The normal sinus ECG waveform with long pauses was presence. During long pause, there are not P-waves or QRS complexes. The pauses are twice or greater-than-twice the normal R-R interval. The interval between beats is not an integer of normal P-P interval. With this, the sinoatrial node discharges but the impulses cannot get through the conduction path between the node and right atrium. Brady-arrhythmia are associated with high levels of vagal tone which may be accounted for during expiration especially in animals with respiratory disease. The sinus node

disease may also be a cause which can be distinguished by a poor response to anti-cholinergics, atropine. A long pause without an AV junctional escape beat at the end also suggests a disease of AV conduction. The long sinus pauses may cause a syncopal episode that can be prevented by atropine given parenterally or propantheline given orally. The bronchodilator, theophylline, aminophylline or terbutaline can be administered to raise heart rate by increased sympathetic tone and reduced cough. If sinus node disease is progress and no longer responds to medication, a permanent cardiac pacemaker is required.