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ECG Quiz

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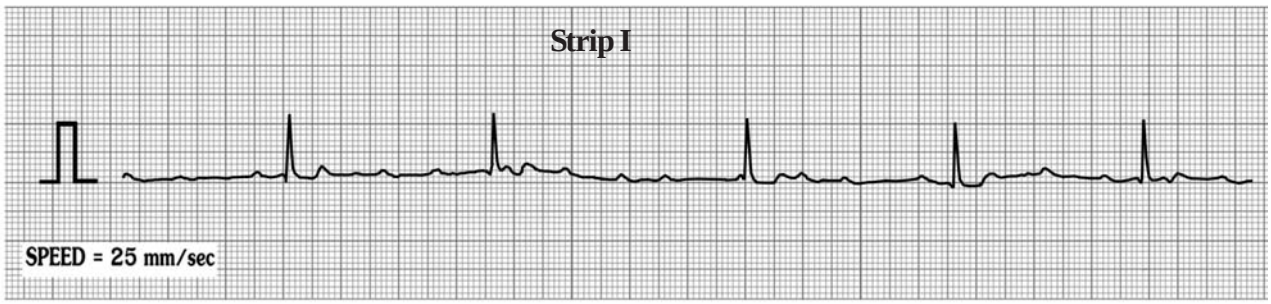
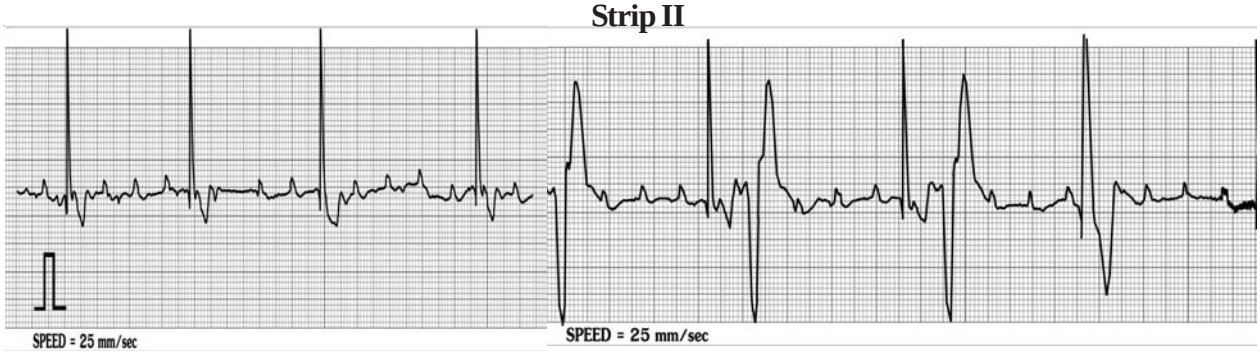
ECG Quiz

Chollada Buranakarl Kris Angkanaporn Anusak Kijtawornrat

Strip I



Strip II



These complex lead II, ECG strips were recorded from a 16 year old, male, mixed breed dog weighing 19.3 kg with a history of panting, enlarged abdomen and exercise intolerance. The physical examination revealed a systolic heart murmur sound, pale mucous membrane and dehydration with fluid filling in the abdomen. The thoracic radiograph revealed a marked enlargement of the whole heart and an interstitial and alveolar pattern of all the lung lobes. Serum chemistry profiles showed increased ALT (769 units), ALP (677 units) and creatinine (1.8 mg %) with a negative SNAP heartworm test. The ascitic fluid was analyzed and showed increased levels of red and white blood cells with no growth of specific bacteria. An ECG was made (strip I) and medications including atropine, pimobendan, enalapril and lasix were orally given. The ECG was reevaluated 20 days later as shown on strip II.

Please make your interpretation before turning to the next page.

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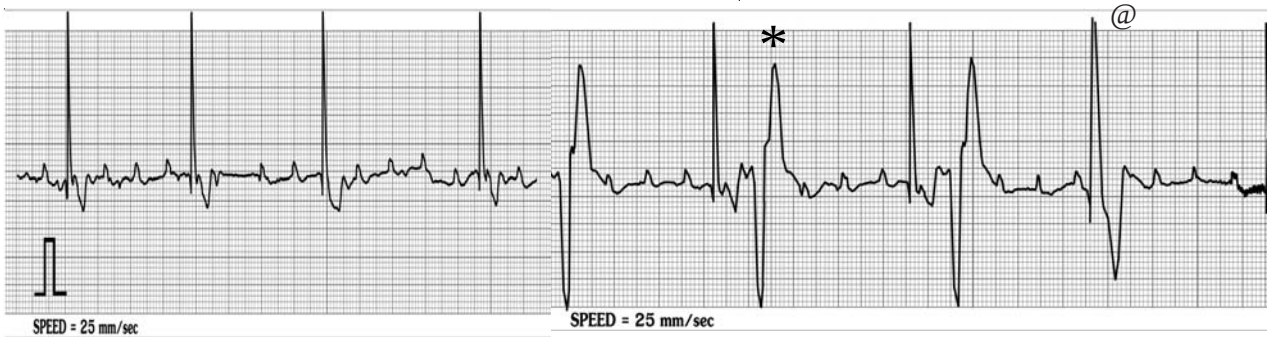
Strip I Sinus rhythm with high grade second degree AV block with Wenckebach periodicity

Strip II Ventricular bigeminy along with high grade second degree AV block (Mobitz type II)



The presence of P waves (thin arrows) not followed by QRS complexes and the normal shape of QRS are the hallmark of second degree AV block. The ratio of atrial and ventricular rate is 3 or 4 to 1. The atrial rate is approximately 150 beats per minute while the ventricular rate is 40 beats minute. The AV block may be related to the vagal tone since the PR interval of the first strip for each QRS complex was variable. A progressively increased prolonged PR interval is known as Wenchebach periodicity. Since the conduction defect was delayed, the junctional escape beat emerged (thick arrow). Atropine may be used to test this vagal effect. Poor response to atropine supports the AV node disease and justifies cardiac pacemaker implantation. Fibrosis of the AV node is a common cause of AV block in geriatric dogs. Atropine, pimobendan, enalapril and lasix were orally given and the ECG was reevaluated twenty days later. The result showed a consistent PR interval but still a high grade second degree AV block which is known as Mobitz type II. Ventricular ectopic beats following normal sinus QRS were found (star). The regular interval between the normal QRS and the ventricular ectopic beat suggests ventricular bigeminy. The bigeminy may be seen following a stage of anoxia causing the unidirectional block or it may be due to the side effects of pimobendan. Please notice an independent ventricular escape beat on a second strip (@). A poor prognosis has been made and the animals should be restricted from exercise.