ECG Quiz

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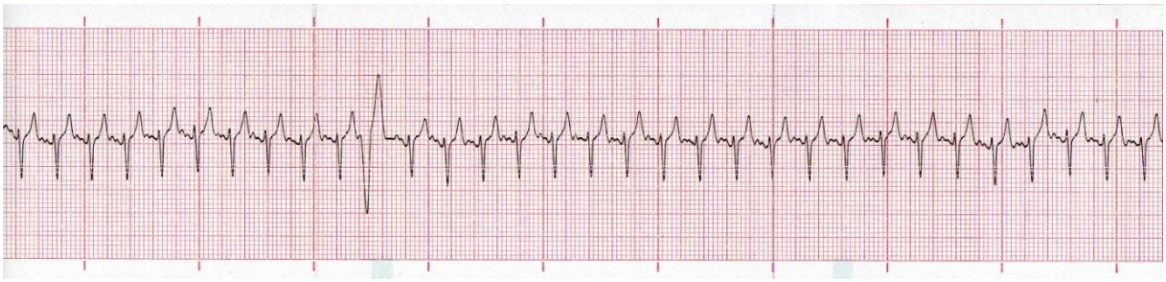

History

A two and a half years old male domestic short hair cat weighing 5 kg was present at the small animal hospital, Chulalongkorn University with a history of enlarged abdomen. The previous visits showed mild azotemia. The diuretic was prescribed daily. The cat was still alert and ate normally. No evidence of coughing was noticed. The urination and defecation were normal. By physical examination, cat had pink mucous membrane with normal hydration. The grade IV systolic heart murmur was detected with normal lung sound. Biochemical blood profiles showed normal numbers of red blood cells and white blood cells count. The concentrations of BUN and creatinine were 32 mg/dl and 1.4 mg/dl, respectively, while the liver panel was within a normal limit. Thoracic radiograph showed severe whole heart enlargement, a marked interstitial infiltration of both caudal lung lobes and mile pleural effusion. Abdominal radiograph showed small size of both kidneys and moderate degree of abdominal effusion (ascites). The echocardiography showed enlargement of all cardiac chamber especially the right atrium. Both interatrial and interventricular septal defects were found. The electrocardiogram was performed periodically and the last recording of lead II ECG was shown.

Please answer before turning to the next page.

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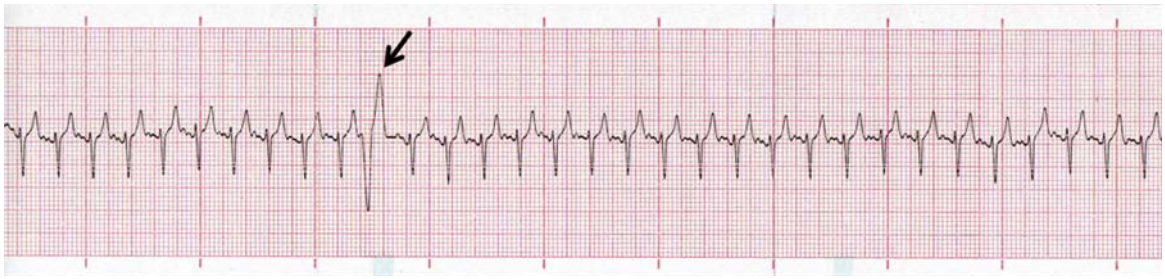
Interpretation

Atrial fibrillation with deep S-wave and ventricular premature complex



The heart rate was approximately 200 beats/minute. The irregular P-waves were noticed in every leads suggesting of possible supraventricular multiple ecpotic foci. The negative deflection of S-wave (deep S-wave) inferred that cardiac vector went toward the right axis deviation. The deep S-wave was a clue for right ventricular hypertrophy. The whole heart enlargement due to blood shunt from left to right can cause right heart pressure overload transferring from the left side. The left side enlargement was due to cardiac pumping with high rate which is forcing to overcome the low cardiac output. Please notice that the QRS complexes with unidentified P wave can be confused with ventricular premature complex (VPC). In this tracing, one VPC in which the bigger deflection with longer duration was defined (arrow). Although the heart can be compensated for low output, the congestion appeared both in the abdomen and the thorax. The angiotensin converting enzyme inhibitor and diuretics were prescribed to control cardiac overload. The prognosis is fair to guard depending on the progression of the myocardial stretch.