

ECG of the Month



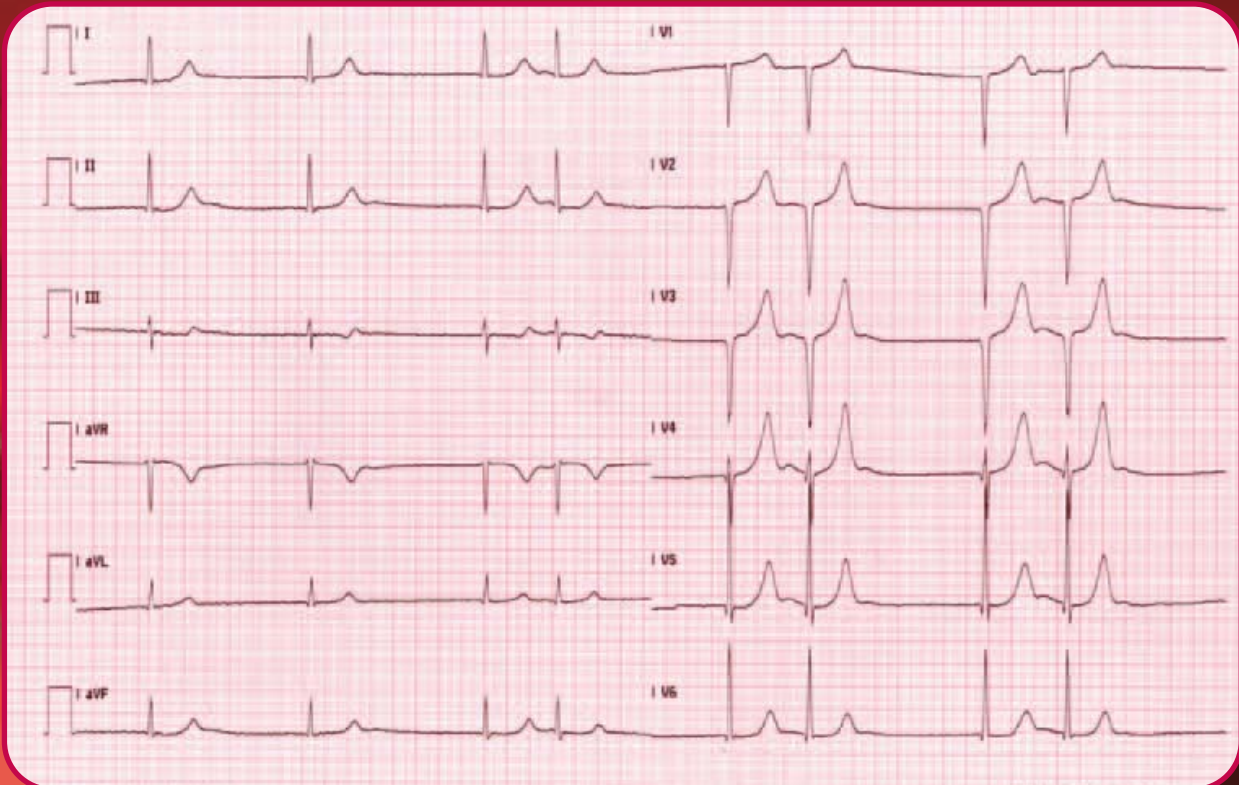
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The Great Escape

This ECG was recorded from an 83-year-old woman who presents for a routine followup several days after initiation of quinine therapy for restless legs.

What is the diagnosis?





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This Month's ECG Diagnosis

The beginning of this ECG strip shows bradycardia with a narrow QRS complex. The QRS complex is not preceded by a visible P wave. As the strip progresses, a bigeminal rhythm is present. The shorter, coupled QRS complex, is preceded by a P wave that falls in the terminal portion of the T wave of the preceding beat. This is best seen with the last beat in V_1 . In addition, there are QS complexes in V_1 to V_3 with a Q wave in the transition zone at V_4 .

This rhythm is a good example of severe sinus bradycardia with "escape-capture bigeminy." In escape-capture bigeminy, the junctional escape rate is faster than the sinus rate. In the absence of ventriculo-atrial conduction, the junctional beat does not reset the slower sinus node. However, the sinus node impulses, which conduct to the ventricle, do reset the junctional pacemaker. As a result, each conducted sinus beat resets the subse-

quent junctional escape beat and the subsequent sinus beat. In this way, when the junctional pacemaker is driven at a faster rate than the sinus pacemaker, the first beat of each bigeminal pair is a junctional "escape" and the second beat is a "capture" beat, captured by the conducted sinus node impulse.

In this particular case, the junctional escape rate is gradually slowing, as can be seen in the gradually prolonging junctional escape intervals throughout the strip.

In addition, this ECG also demonstrates what is likely to be anterior infarction, although these Q waves can rarely be caused by left ventricular hypertrophy.

The role of the quinine therapy in producing this rhythm is unclear. It is most likely that the therapy interacted with a pre-existing sinus node disease. 