An interesting electrocardiogram

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Having spent years collecting electrocardiograms (ECGs), I found this one the most intriguing (*Figure*). Try to solve it. Two hints: (1) don't be seduced by the top row; and (2) a caliper is useful.

SOLUTION

At first blush, the strip across the top appears to be 2:1 block. On more careful inspection, it appears the PR is shortening, suggesting the possibility of an ectopic pacer. If one takes that cycle length (RR interval), it can be identified elsewhere in the record. This is a junctional escape pacemaker; all the other beats are sinus capture with a variety of PR intervals. These intervals are determined by the preceding RP (i.e., recovery time of the atrioventricular node; Henry Marriott's famous "RP-dependent PR"). The last two beats in the third strip have the longest and shortest PRs. They also have the shortest and longest RPs. If the RP is too short, it may fall in the absolute refractory period of

Figure. An interesting electrocardiogram.

the atrioventricular node and not conduct. Every component of the record has a rational explanation.

One of the confusing features of this tracing is that coincidentally, the sinus rate of 76 is almost a multiple of the independent junctional rate of 39. This may lead to confusion that a P and a QR are related when they are not!

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