How Is This Happening?
Discussion

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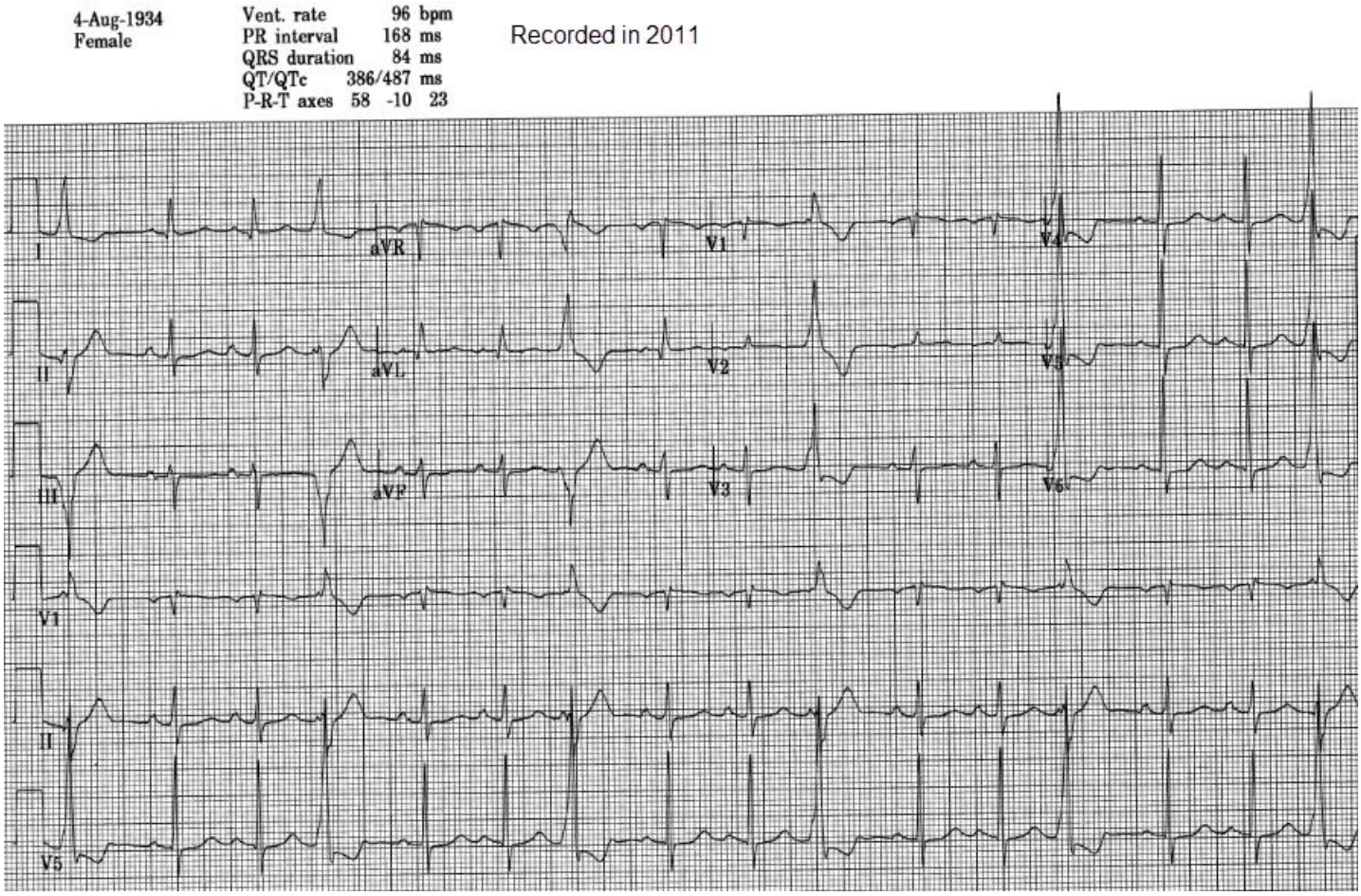

Figure 1

My question today is this: how does the heart "count in 'threes'?" Either a beat conducts – or it doesn't. That's a *binary* phenomenon. Yet, there is a way the heart can count in "threes" in which an event occurs every *third* beat.

What is happening here to create a ventricular ectopic complex *every third beat?*

The answer is actually rather simple: a 2:1 exit block is occurring in the exit path of the area of myocardium producing the ectopic beat. And this block can be due to a Mobitz I or a Mobitz II block. (Yes… Mobitz blocks can occur in areas *other than* the AV and SA nodes!)

So, the R-R intervals without an intervening ectopic beat are due to the exit block. There is even a name for this – *concealed ventricular bigeminy*.

Ventricular bigeminy is caused by the ventricular impulse having to wander through an area of scar until it finds its exit path. By the time it exits, the rest of the ventricle has already repolarized and so a new ectopic ventricular impulse is created. It is in this exit path that the block occurs. So, with a 2:1 exit block – whether Mobitz I or Mobitz II – a ventricular ectopic QRS will appear every third beat.