

What Is YOUR Assessment of This ECG?

Discussion

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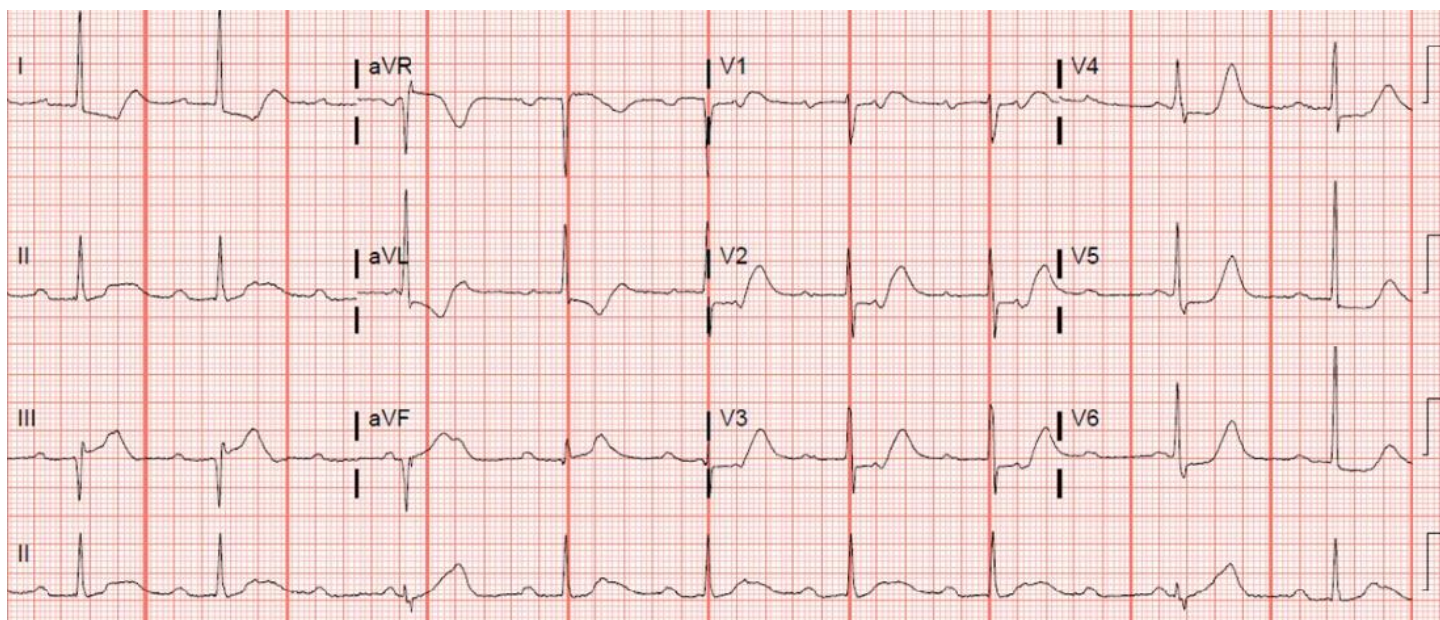


Figure 1

This Lead II rhythm (4th channel) is laddergrammed below.



This represents a **first degree AV block** with a **dual-level AV block in the AV node itself**.

The rhythm is sinus (P waves are upright in both Leads I and II and Lead II has the taller P wave). The P waves are regular, but the rate is just a bit too fast (between 120 – 130/minute) for the AV node to accommodate as a 1:1 conduction. This is still well within the range for a sinus tachycardia.

The P wave following each QRS fails to conduct – but their failure to conduct is understandable as a consequence of the refractoriness of the the AV node and/or His-Purkinje system. Under the circumstances (first degree AV block), we would not be surprised at their failure to conduct.

The P waves indicated by the crimson arrows are P waves that should have conducted – but did not. These two P waves represent occurrences a lower level of the AV block in the lower node. The resulting pause is long enough to allow a junctional escape beat to appear in late diastole. We sometimes refer to the PR interval as *late diastole*. If an ectopic QRS appears *after* the onset of the P wave but *before* the next expected QRS, we refer to it as a ***late diastolic beat***.

The presence of a first degree AV block in the conducted beats is consistent with the 2:1 conduction through the AV node aside from the occasional block in the lower level of the AV node.

Since the QRS complexes are all narrow, the blocks are on two levels within the AV node: the first degree AV block is occurring in the upper AV node the second block is occurring in a lower level of the AV node. Why is this NOT a Mobitz II AV block? Because a Mobitz II AV block occurs *below* the AV node and the QRS would be *abnormally widened*; however, it is not wide at all.

There is one other possibility – which we have no way of proving without an EP study. We have two occasions of a junctional escape beat that conducts to the ventricles but not the atria. If the junctional beats were perhaps the *second* beat of a *junctional bigeminy*, then a *completely concealed junctional beat* occurring at the time of the mid-diastolic non-conducted P waves (crimson arrows) could explain the non-conduction.