



This is a very complicated dysrhythmia and has multiple teaching points. Basically, it is an accelerated junctional rhythm that is only slightly faster than the sinus rhythm. This has resulted in a dissociated rhythm. AV dissociation may not be EXACTLY the correct term because both pacemakers are supraventricular, but since the sinus P waves are dissociated from the QRS complexes, AV dissociation as a description is good enough. There are usually two kinds of AV dissociation - by DEFAULT and by USURPATION. This is definitely "usurpation" since the sinus rate is in the normal range. When the sinus rate and the usurping rate are close together, we sometimes call that "dissociation by interference," and that is what this is.

One of the things that distinguishes plain AV dissociation from AV dissociation due to a 3rd degree AV block is an irregularity in the ventricular rhythm. An irregularity means that a capture beat has occurred and thus there is conduction from atrium to ventricle. While most of the QRS complexes are occurring with a very regular rhythm, there are two beats that appear early. These are "sort of" capture beats. Actually, they represent junctional reciprocation - a junctional beat is able to excite (at least part of) the atria and then returns via a different AV nodal/junctional pathway to re-excite the ventricles. Here's where it gets a bit complicated. We would expect to see an inverted P' between the two junctional beats (on this tracing, beats 2/3 and beats 11/12). We don't see anything between beats 2 and 3 but there is a tiny retrograde P' between beats 11 and 12.

Judging from the P-P intervals that can be measured on the Lead II rhythm strip, a sinus P wave should have appeared shortly after QRS #2 - but the baseline is isoelectric. A junctional reciprocal beat would have placed an inverted, retrograde P' wave at about the same position. What we have here is most likely a fusion of the upright sinus and inverted retrograde P waves resulting in an isoelectric line. If you look closely between QRS complexes 11 and 12, you can see a tiny inverted P' wave. In this case, the retrograde P' has dominated.

There is a disruption in the sinus rhythm following the 8th QRS complex. In this case, the junctional beat has managed to reach the SA node and reset it. You can see a tiny inverted, retrograde P' in the nadir of the T wave following the 8th QRS. After the SA node is reset, it continues at its regular rate and rhythm. The two atrial fusions do not reset the SA node because the retrograde P' impulses never got that far.

There are several "normal" PR intervals on the rhythm strip but don't be fooled by them into thinking that AV conduction has taken place. If those PR intervals had resulted in conduction, there would be an irregularity in the

ventricular rhythm and there is none. Most likely there is a significant 1st degree AV block and that is what has allowed the dissociation to continue here as long as it has. AV dissociation by interference is usually a very short-lived phenomenon.

I hope this helps.

Thanks!

A handwritten signature in black ink, appearing to read "J. W. Jones". The signature is written in a cursive style with large, overlapping loops for the letters.