

# The Lowly First Degree AV Block

Just like the late stand-up comedian, Rodney Dangerfield, first degree AV block *just doesn't get any respect!* It's one of the first phenomena learned in introductory ECG classes and is usually brushed aside with comments like "it's asymptomatic," "it's totally benign" or "it's nothing you or the patient should ever be concerned about." Add to that "along with sinus tachycardia, it's the easiest conduction abnormality to recognize!"

First of all, it is NOT always asymptomatic!

Consider this: you have a 72 y/o patient with a long history of advanced COPD and first degree AV block. The weather turns warm and the patient becomes overheated a bit - not heatstroke, but just warm. The heart rate picks up and the patient suddenly becomes more distressed. Breathing becomes very labored. There are large pulsations in his neck with every heart beat and he is becoming cyanotic. What has occurred here? The increased heart rate just shortened the T-P interval and now this patient's P wave is occurring right next to the T wave (**Fig. 1**). Atrial systole is taking place around the same time as mechanical ventricular systole. Any wagers on which chamber is going to win this competition? The atria find the AV valves still closed as they begin to contract. The blood in the atria must go somewhere, but right now *forward doesn't appear to be much of an option*. The right atrium refluxes back into the superior and inferior vena cavae. That's where the neck pulsations are coming from. But the left atrium can only reflux back into the lungs. That is where the dyspnea, cyanosis and distress are coming from. Before the sinus tachycardia, the patient was compensating quite well - now he is in rather marked distress. And all because of a sinus tachycardia occurring in a patient with a "lowly" first degree AV block.

A first degree AV block in the presence of a RBBB with an anterior fascicular block can be quite ominous - especially if any (or all) of the blocks are new. When a RBBB with an anterior fascicular block is present, we know that the only thing keeping this patient out of complete heart block (which could be lethal!) is the posterior fascicle. But in most of these cases - and especially if the findings have been present a long time - the patients do pretty well because the posterior fascicle has a *dual blood supply*, is *larger and hardier* than the anterior fascicle and it lies in a *relatively protected area* of the left ventricle. But with a first degree AV block, the likelihood of the first degree conduction delay residing *below* the AV junction becomes more probable. What this means - *now* - is that ***there is just one fascicle keeping this patient out of complete heart block and that fascicle is diseased because, though it can conduct, it cannot conduct normally!***

One fact you should always remember about first degree AV block is that it is quite rare in people under the age of 50 years. The incidence of first degree AV block in young adults is 0.65% to 1.6%. If you see a first degree AV block in a young person - and especially if it is a new

finding - *do not assume this is a benign finding!* Let's say your patient is a 37 year old male who is an IV drug abuser who presents with a fever of 102.6 F; or a 29 year old female who had an aortic valve replacement and is also running fever. A first degree AV block in these young patients may be the first indication you have of a *para-aortic abscess impinging on the His bundle* creating the conduction delay. A first degree AV block in a young man who is a hiking and camping enthusiast may be your first hint to check for *Lyme disease*. First degree AV block often appears in patients with *myocarditis caused by diphtheria, rheumatic fever, or Chagas disease*. Again, **first degree AV block is very, very uncommon in young adults** and if present - *especially with fever* - often indicates cardiac involvement by an outside disease process which can range in severity from relatively benign to rapidly lethal!

As far as being a very "simple" conduction delay that is easily recognizable, consider the rhythm strips in Fig. 2 and Fig. 3...



Figure 2

If your patient is over 50 years of age, healthy and without any significant symptoms, a first degree AV block is unlikely to be a worrisome finding. However, if your patient is under the age of fifty, you should remember that this is

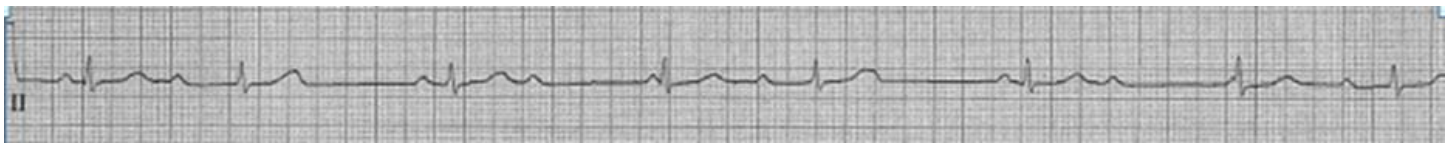


Figure 1

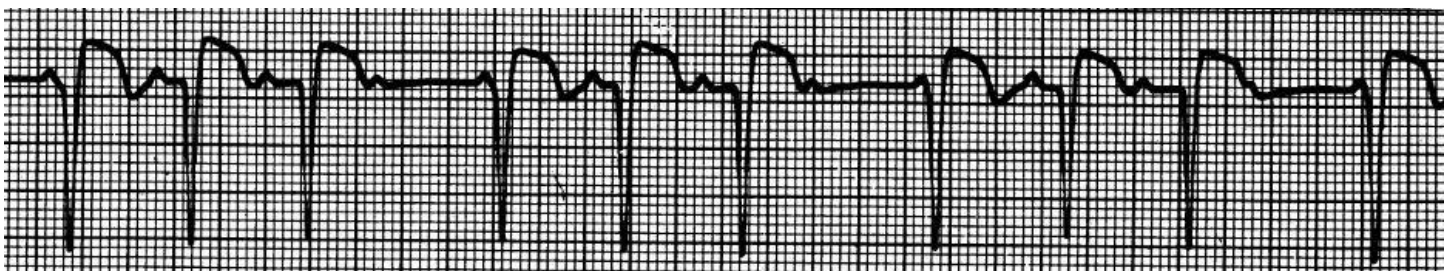


Figure 3

a relatively rare finding and that many of the conditions causing it are very, very serious. Never minimize the significance of the "lowly" first degree AV block.

***Always consider its significance in relation to the patient's age and complaint(s).***