

*From Sinus Node to AV Node: Bradycardia*

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Bradycarrhythmias are mostly caused by abnormalities of any level from sinoatrial (SA) node to atrioventricular (AV) node in the cardiac conduction system. SA node or sinus node is a collection of pacemaker cells which exhibit automaticity and initiate electrical impulse. The electrocardiographic (ECG) manifestations of sinus node dysfunction, pathological processes involving the SA node proper, include sinus bradycardia, sinus pause/arrest, sinus exit block, tachycardia-bradycardia syndrome, and chronotropic incompetence. Presence of P wave, length of pause, and P-P interval with relationship to the pause are key ECG findings in determining clinical severity as well as differential diagnosis. Sinus node recovery time may be used in assessing the SA node function during electrophysiologic testing. There are three internodal pathways from SA node to AV node; anterior, middle, and posterior. AV node is a subendocardial structure which is responsible for slowing down conduction from the atria to ventricles, allowing the atria to overfill the ventricles. AV conduction block manifests as slow conduction and failure to conduct; first-degree AV block, second-degree AV block, high-grade AV block, and complete AV block. Second-degree AV block associated with a series of nonconducted P waves is paroxysmal AV block, implying significant conduction system disease. PR interval, multiple nonconducted P waves, and QRS width may play an important role in determining the level of conduction block. In case of 2 to 1 AV block, it may be difficult to distinguish type I from type II second-degree AV block. Caseous calcification of the mitral annulus, a mass-like lesion, is an extremely rare cause of significant AV block. Electrophysiologic testing using His electrogram recording may be useful in the defining the location of the block.