

ArrhythmiaNEWS

From the Arrhythmia Service of St. Luke's-Roosevelt Hospital Center

Arrhythmia News is a physician bulletin providing arrhythmia updates and information on services at **St. Luke's-Roosevelt Hospital Center** which may benefit your practice and your patients.

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Asymptomatic WPW – Should We Get Excited?

The prevalence of **Wolff-Parkinson-White** in the general population is approximately 0.1-0.3 percent. The most common EKG characteristics include a short PR interval, a “delta wave” (slurred upstroke of the QRS complex) and a prolongation of the QRS complex.



In these patients, an accessory (extranodal) pathway exists allowing for atrioventricular conduction to occur through a route not dependant on the AV node. An impulse from the sinus node can activate the AV node as well as the more rapidly conducting accessory pathway in parallel. This is manifest as a “delta wave” or “ventricular pre-excitation” on the EKG. These findings may occur in asymptomatic patients and may be found incidentally on EKGs. The pattern of pre-excitation present on the surface EKG allows for prediction of the location of the accessory pathway.

In patients with pre-excitation and clinical symptoms attributed to supraventricular tachycardia, the diagnosis is WPW Syndrome. Supraventricular tachycardia is seen frequently in WPW, occurring in up to 50% of patients. The most common tachycardia occurring is **atrioventricular reciprocating tachycardia (AVRT)**, of which 2 forms exist. In orthodromic AVRT, a circuit exists with the AV node acting as the antegrade limb and the accessory pathway as the retrograde limb.

During this form of AVRT, the characteristic EKG findings are a narrow QRS with retrograde p waves present shortly after the QRS complex. If this circuit is reversed, antidromic AVRT results. This tachycardia, which is far less common, accounts for only 5-10% of cases. The EKG during this form of AVRT is characterized by a wide QRS complex, as antegrade conduction occurs via the accessory pathway rather than over the AV node. Either of these forms of SVT can degenerate into atrial fibrillation (AF), the second most common tachycardia in patients with WPW.

AF Can Be Cause for Concern

The occurrence of AF in patients with accessory pathways is particularly concerning. Normally, the AV node acts as the “gatekeeper” protecting the ventricles from ultra-rapid conduction. No such “gatekeeper” exists in the presence of an accessory pathway and AF may be

conducted rapidly to the ventricles triggering ventricular fibrillation and sudden cardiac death on rare occasions. Patients who are younger, have multiple accessory pathways and have accessory pathways present in septal locations are thought to represent a group at increased risk of sudden death.

Several non-invasive markers can be used to stratify WPW patients for sudden death risk. Intermittent “delta waves” or pre-excitation, disappearance of the “delta waves” or pre-excitation with exercise and the ability to block antegrade conduction in the accessory pathway with pharmacologic agents such as **procainamide**, suggest poor conduction via the accessory pathway and a low likelihood of sudden death. These non-invasive markers however, can often be difficult to assess with certainty. In the EP lab, by invasive means, catheters are used to perform programmed electrical stimulation and accurately identify critical electrophysiologic properties of the accessory pathway and characterize clinical arrhythmias as well as long-term risk.

Is RF Ablation the Answer?

Whether or not to perform diagnostic EP studies and RF ablations in all patients with WPW remains controversial. Although rare, population studies report the incidence of sudden death in patients with WPW as 0.0002-0.0005%. In fact, given the low risk of sudden

death in these patients, it has been the consensus that EP study and RF ablation should not routinely be recommended for all WPW patients.

Exceptions to this are in patients with particularly high-risk professions such as pilots and professional athletes.

Recently, a randomized prospective trial of 224 asymptomatic patients with WPW compared a strategy of ablation vs. no ablation in “high risk” patients. Patients were risk stratified based on the results of a diagnostic EP study. Those in the “high risk” group were then randomized to receive either RF ablation or medical follow-up. The results of the study suggest that RF ablation in “high risk” patients decreases the incidence of symptomatic episodes of AVRT and possibly cardiac arrest. The study however, was done in a single center and only a small number of patients, possibly subject to selection bias, were included.

At this time, the **American College of Cardiology**, the **American Heart Association** and the **North American Society of Pacing and Electrophysiology** have not changed their recommendations to warrant an EP study and RF

ablation in all asymptomatic patients with WPW.

The presence of symptoms however, clearly warrants further evaluation by an electrophysiologist and is likely to include an EP study and often RF ablation. Additionally, certain “high-risk” professions such as pilots, scuba divers, bus-drivers, truck drivers, police officers and professional athletes, require strong consideration for an EP study and ablation even in the absence of clinical symptoms. Perhaps given the ongoing debate, creation of a national or even international registry of patients with WPW will make more clear whether we need to readdress the recommendations in all asymptomatic patients.

References:

Pappone, C. et al. *A Randomized Study of Prophylactic Catheter Ablation in Asymptomatic Patients with the Wolff-Parkinson-White Syndrome*. N Engl J Med 2003;349:1803-11.

ACC/AHA/ESC Guidelines for the Management of Patients With Supraventricular Arrhythmias. J Am Coll Cardiol. 2003 Oct 15;42(8):1493-531.

Also available at:

www.acc.org/clinical/guidelines/arrhythmias/sva_index.pdf

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