

Pathophysiology of a Rare Heart Disease: Wolff-Parkinson-White Syndrome

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DESCRIPTION

Wolff-Parkinson-White Syndrome, also known as WPW Syndrome, is a rare but potentially life-threatening heart condition that affects the electrical system of the heart. This condition is caused by an extra electrical pathway that develops between the atria and ventricles, which can lead to episodes of rapid heartbeats, or tachycardia. WPW Syndrome is named after the two physicians who first described the condition in 1930, Drs. Louis Wolff and John Parkinson, and the surgeon, Paul Dudley White. The syndrome is estimated to affect around 1-3 people per 1,000 individuals worldwide. Symptoms of WPW Syndrome can vary from person to person, but common signs include palpitations, shortness of breath, chest pain, dizziness, fainting, and fatigue. In some cases, patients may not exhibit any symptoms and are only diagnosed through routine Electrocardiogram (ECG) tests. The exact cause of WPW Syndrome is unknown, but it is believed to be a congenital condition, meaning it is present at birth. It occurs when an additional electrical pathway, known as the accessory pathway, develops between the atria and ventricles. This pathway can cause the electrical signals to bypass the normal pathway, leading to a faster heartbeat. During an episode of tachycardia, the heart can beat up to 300 times per minute, which can be life-threatening if left untreated. In severe cases, WPW Syndrome can lead to cardiac arrest or sudden death, particularly in younger patients. Diagnosis of WPW Syndrome usually involves an ECG test, which can detect the characteristic delta wave that is present in patients with the condition. If WPW Syndrome is suspected, further testing, such as a Holter monitor or an electrophysiology study, may be required to confirm the diagnosis. Treatment options for WPW Syndrome include medications, lifestyle changes, and procedures. Medications such as beta-blockers, calcium channel blockers, and antiarrhythmic drugs can be used. WPW syndrome is characterized by an abnormality in the heart's electrical pathway, which can cause rapid heartbeats or arrhythmias. Although WPW syndrome can occur in people of

any age, it is most commonly diagnosed in young adults and children. The normal electrical conduction system of the heart involves the Sinoatrial (SA) node, which generates the electrical impulses that cause the heart to beat.

These impulses travel through the Atrioventricular (AV) node, and then into the ventricles, causing them to contract and pump blood throughout the body.

Symptoms of WPW syndrome

Palpitations: A rapid or irregular heartbeat or a pounding sensation in the chest.

Shortness of breath: Difficulty in breathing.

Chest pain: Discomfort or tightness in the chest.

Dizziness: Feeling lightheaded, faint, or unsteady.

Fainting: Losing consciousness or passing out.

Fatigue: Feeling tired or exhausted.

Anxiety: Feeling worried, nervous, or fearful.

Diagnosis of WPW Syndrome

An Electrocardiogram (ECG), a test that gauges the electrical activity of the heart, is used to identify WPW syndrome. An auxiliary route will be present if the ECG displays an irregular pattern. To assess the health of the heart and the frequency of SVT episodes, a doctor may also carry out other examinations, such as a stress test or a Holter monitor.

Treatment of WPW syndrome

The treatment of WPW syndrome depends on the severity and frequency of the symptoms. In some cases, people with WPW syndrome may not require any treatment, and the condition may not cause any significant health problems. However, if the person experiences frequent episodes of Supraventricular Tachycardia

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(SVT), or if the episodes last for a long time, treatment may be necessary.

The most common treatment for WPW syndrome is a procedure called catheter ablation. During this procedure, a thin tube called a catheter is inserted into a blood vessel in the groin and threaded up to the heart. The catheter is used to destroy the extra pathway with radiofrequency energy. This procedure is effective in curing WPW syndrome in approximately 95% of cases.

In some cases, medications may be used to control the heart rate during an episode of SVT.

Complications of WPW syndrome

The most serious complication of WPW syndrome is sudden cardiac arrest, which can occur if the rapid heartbeat causes the heart to stop pumping blood effectively. This complication is rare, but it can be life-threatening if not treated promptly.