

Wolff-Parkinson-White Syndrome (WPW)

The heart has its own electrical conduction system which sends signals throughout the heart muscle to make it beat in a regular rhythm. Sometimes an extra pathway exists, which can cause the heart rhythm to change. This extra electrical pathway may be a reason that the heart can cause the heart to beat too quickly (tachycardia), or irregularly which may, in some cases, cause a very fast unstable heart rhythm disorder.

What is Wolff-Parkinson-White Syndrome?

Wolff-Parkinson-White Syndrome (WPW) is a combination of symptoms of palpitations, with the presence of an extra electrical pathway, resulting in an EKG abnormality. The extra pathway can result in episodes of fast heart rhythm. This is a problem present from birth but may not present itself until adulthood. It affects between one and three in every 1,000 people. In most cases, the heart is structurally normal.

The extra electrical pathway (known as an accessory pathway) directly connects the atria (the top chambers of the heart) to the ventricles (the bottom chambers of the heart). If the electrical impulses travel up the accessory pathway, and down the AV node, a fast heart rhythm called supraventricular tachycardia (SVT) may occur. In rare cases, a different, irregular rhythm, called atrial fibrillation (AF), may travel down the accessory pathway and cause a very fast unstable heart rhythm disorder. This is known as pre-excited AF and usually requires emergency medical treatment.

Signs and symptoms

Some people have no symptoms and just have the EKG abnormality due to the accessory pathway. This is not strictly speaking WPW, but called pre-excitation. The condition is usually then only discovered on routine EKG recording.

People may report the following symptoms, varying from mild to severe:

- ♥ A fast, racing heart beat (supraventricular tachycardia)
- ♥ Feeling lightheaded or dizzy
- ♥ Shortness of breath
- ♥ Chest pain
- ♥ Sweating
- ♥ Feeling anxious
- ♥ Syncope (fainting)

Symptoms can last for seconds, minutes or hours, and vary in frequency from daily occurrence to only a few times a year.

Causes

Symptoms due to WPW usually occurs randomly without any identifiable triggers.

Diagnosis/Investigations

Initially you will have an electrocardiogram (EKG) performed which may show evidence of an accessory pathway responsible for WPW. You will then be referred to a specialist heart doctor; a cardiologist or electrophysiologist.

If your doctor suspects you have WPW, but it is not completely clear on the routine EKG, he/she will advise you to have an adenosine challenge to confirm your diagnosis. This is known as latent pre-excitation. Some patients have intermittent pre-excitation, which means it is not seen on every EKG.

What is an adenosine challenge?

Adenosine is a naturally occurring substance found in all of us. Adenosine briefly blocks normal conduction through the AV node, which slows your heart rate and unmasks EKG changes in patients who have a latent of WPW, since the accessory pathway (or bypass tract) is not blocked, and so a fast heart rate still occurs.

Your doctor will administer the drug through a vein in your arm and record your EKG. The EKG will record the effects of the adenosine on the AV node and unmask any presence of an accessory pathway.

Risks of the procedure

The adenosine challenge is a well-established and safe clinical test, but as with any procedure there are potential risks. Complications associated with the procedure are very rare, can be treated and are rarely life threatening. If you are asthmatic, please tell your doctor as an injection of adenosine may bring on an asthma attack.

It is common to experience a metallic taste in your mouth during the procedure, and visual disturbances such as double vision may also occur. These side effects usually resolve themselves once the procedure is complete. The adenosine causes your heart to go into a very slow rhythm and if it does not recover quickly you may require external pacing to regulate your heart rhythm (this is extremely rare).

It is important that for the duration of the procedure, if you feel any palpitations, dizziness, or uncomfortable symptoms you inform your nurse or doctor.

Before the procedure

You may be asked to have nothing to eat or drink for a period of time before the test. On arrival, you will be introduced to the nurse and the doctor who will be looking after you. The procedure will be explained to you, and if you have any worries or questions please do not be afraid to ask. It is important for you to tell your nurse or doctor if you have any allergies or have had a previous reaction to drugs or other tests.

A small catheter (a cannula) will be inserted into a vein in your hand or arm via a needle to allow the doctor to give you the adenosine during the procedure. You will also wear a hospital gown to make it more comfortable with the leads attached to your chest and easier to record the EKG.

During the procedure

During the procedure, you will be awake and able to talk and your doctor and nurse will stay with you throughout the test. There will be equipment by your bedside which is used to monitor your heart rhythm and record your blood pressure and for the duration of the challenge you will be connected to the EKG machine. The doctor will inject the adenosine into the cannula – this is given as a bolus dose, which means the doctor pushes the drug quickly into your bloodstream, which may sting a little.

After the procedure

Following the procedure your pulse and blood pressure will be checked and the small cannula in your hand will be removed. Your doctor will discuss the results with your consultant.

What treatment options are available to me?

If the test result is negative, your doctor will consider your individual risk, and advise you if further tests are needed to be performed. It is likely that you will be able to go home a few hours after the test. However, it is advisable that you do not drive, and that you have someone with you for the rest of the day after the test.

If the test is positive, and you may be at risk of a fast heart rhythm developing, your doctor may suggest you have an electrophysiology (EP) study and possible catheter ablation. The EP study is an invasive procedure, where catheters are placed within the heart via the vein at the top of your leg.

Various electrical measurements are made, to determine if the accessory pathway is capable of supporting SVT, or pre-excited AF. It will be possible to tell how fast the pathway conducts electrical impulses and if it is safer, in the long term, to destroy it in the form of catheter ablation. Catheter ablation is a curative procedure that will destroy the extra pathway that is capable of causing SVT and pre-excited AF.

Your consultant/nurse specialist will discuss the risks and benefits of catheter ablation with you should you appear to need one. See Arrhythmia Alliance's Catheter ablation for cardiac arrhythmias booklet.

Following your discharge from hospital you will be able to return to your normal daily activities, including returning to work.

Your doctor/nurse specialist may recommend drug treatment prior to any invasive treatment. This may be an antiarrhythmic drug, such as flecainide or a beta blocker, which both help to prevent fast heart rhythms and slow down the action of the accessory pathway.

With regard to lifestyle modifications, it is important to avoid illicit or recreational drugs, such as cocaine, ecstasy and other stimulants, as these can be dangerous in this condition.

What about my family and relatives?

There is very little evidence of any genetic or familial form of WPW. It is thought to be caused by a small heart muscle fibre which becomes stranded slightly out of place during development in the womb. If there is any major concern about a relative, then a simple 12-Lead EKG test can be used to screen them for WPW or pre-excitation.

Acknowledgements: Arrhythmia Alliance would like to thank all those who helped in the development and review of this publication. In particular, thanks are given to Angela Griffiths and Dr Charlotte D'Souza.

President: Prof. A John Camm **Board of Directors:** Trudie Lobban MBE, Jim Quance, Joseph Reynolds, Nigel Breakwell, Daniel Beach, John Thompson

© Arrhythmia Alliance Non-profit organization 501(c)(3)
Published April 2010, Reviewed April 2017

