
Wolff-Parkinson-White syndrome

Summary

- Wolff-Parkinson-White syndrome is characterised by attacks of rapid heart rate (tachycardia).
 - A person with Wolff-Parkinson-White syndrome has two electrical pathways inside their heart instead of one, and the extra pathway can lead to instability in the electrical control mechanism of the heart.
 - Treatment options include medication, a heart catheter procedure, the implantation of a pacemaker, or surgery to eliminate the extra pathway.
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Wolff-Parkinson-White syndrome is characterised by attacks of rapid heart rate (tachycardia), which is shown in an electrocardiogram (ECG). In some people the ECG abnormality may be present without any symptoms such as tachycardia.

The heartbeat is regulated by electrical impulses that travel through the atria (upper chambers of the heart) to a knot of tissue known as the atrioventricular node, and then to the ventricles (lower chambers of the heart). Usually electrical impulses pause at the atrioventricular node before prompting the ventricles to contract.

In Wolff-Parkinson-White syndrome, an extra pathway conducts the electrical impulses to the ventricles without the normal delay. This extra pathway does not usually have serious consequences. However sometimes the extra (“accessory”) pathway may “bounce” the electrical impulses back to the atria after each beat. This creates a circuit in which each atrial (upper chamber) beat is followed by a ventricular (lower chamber) beat, which is then followed by another atrial beat and so on. The heart rate can reach over 200 beats per minute, when the normal resting heart rate is around 70 to 80 beats per minute.

Between one and two people per 1000 are thought to have Wolff-Parkinson-White syndrome. The condition can be managed with medications and a procedure to get rid of the extra pathway, which usually does not require surgery.

Symptoms

The symptoms of Wolff-Parkinson-White syndrome include:

- Episodes of markedly accelerated heart rate (usually faster than 200 beats per minute).
- Heart palpitations.
- Tightness in the chest.
- Shortness of breath.
- Drop in blood pressure.
- Light-headedness.
- Dizziness.
- Fainting spells.

Complications

In most cases the episodes of tachycardia are short-lived and the person recovers quickly. However some of the complications of Wolff-Parkinson-White syndrome can include:

- Low blood pressure.
- Loss of consciousness.

- Heart failure.
- Heart attack.
- Death.

The cause is unknown

Wolff-Parkinson-White syndrome is one of the leading causes of fast heart rate disorder in newborns and young children. It is not clear what causes the additional pathway to develop inside the heart.

The condition is present at birth, but genetic factors usually do not play a major role. However some families may have more than one affected individual and there does appear to be a weak hereditary tendency, with an increased incidence in the children of affected individuals (4-5 per 1000). Since the cause is unknown, prevention is not possible.

Diagnosis methods

Wolff-Parkinson-White syndrome is investigated using a number of tests including:

- Physical examination.
- Medical history.
- Electrocardiogram (ECG) to measure the heart's electrical activity.
- Echocardiogram to rule out associated structural heart defects.
- Exercise testing to assess whether the ECG abnormality persists with exercise.
- Holter (24 hour) ECG to monitor the ECG and heart rate over a longer period.
- Electrophysiology study, which measures the heart's electrical activity by threading a number of catheters through the blood vessels, from the groin to the heart, to map the heart's electrical activity.

Treatment options

The treatment options for Wolff-Parkinson-White syndrome depend on the severity, but can include:

- **Vagal manoeuvres** - Use of various 'tricks' that may cause a nerve reflex to slow the heart rate. These tricks could include blowing hard against resistance (such as with mouth and nose closed) or a facial ice pack. A cardiologist will provide advice.
- **Anti-arrhythmic drugs** - to slow the heart rate or to prevent attacks.
- **Electric cardioversion (shock)** - to stop a tachycardia attack.
- **An electrophysiology study** - to locate the site of the extra pathway and eliminate it, using a short treatment with radio frequency energy, applied through a catheter.
- **An artificial pacemaker** - to help regulate the heart rate.
- **Open-heart surgery** - to eliminate the extra pathway.

Long term outlook

In some children the problem may resolve on its own, usually within the first few years of life. If it persists then most individuals will require treatment.

Medications to control the heart rate don't always work, or else the medications cause unwanted side effects. Even when medications are effective it is not desirable for patients to continue such treatment over many years.

Removing the extra pathway, via catheterisation, usually cures the disorder. This can be done effectively in most patients after the age of about seven years. In many cases, the extra pathway is easily found, but sometimes it's difficult to locate. If it cannot be found or eliminated safely then long-term medication may be necessary or surgery might be recommended.

A person with Wolff-Parkinson-White syndrome will need ongoing monitoring, such as regular ECGs, to make sure their heart is functioning normally.

Where to get help

- Your doctor
- Heartkids Victoria Tel. (03) 9513 9030
- The Association of Genetic Support of Australasia Tel. (02) 9211 8077

Things to remember

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This page has been produced in consultation with and approved by:

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