CONDITION

Wolff Parkinson white syndrome

Wolff-Parkinson-White syndrome is an extra electrical heart pathway that can cause episodes of a very fast heartbeat.

WHAT IT IS
Extra electrical heart pathway causing episodes of rapid rhythm

BODY SYSTEM
Heart and circulation

MAIN SYMPTOMS
Racing heartbeat, palpitations, dizziness, fainting

WHAT CAUSES IT
Usually congenital extra electrical pathway

HOW IT IS DIAGNOSED
ECG and sometimes an electrophysiology study

MAIN TREATMENT
Catheter ablation or specialist monitoring

CAN IT BE CURED?
Yes - ablation can remove pathway

IS IT AN EMERGENCY?
Sometimes - fainting, chest pain, or severe breathlessness

LONG-TERM OUTLOOK
Usually normal with treatment or low-risk monitoring

Overview

Wolff-Parkinson-White syndrome, often shortened to WPW, affects the heart's electrical system. A person with WPW is born with an extra electrical connection between the heart's upper and lower chambers.

Normally, each heartbeat travels through a controlled electrical route. The extra pathway can act as a shortcut. An electrical signal may circle repeatedly through the normal route and the extra pathway, causing a sudden, very fast heart rhythm called a tachycardia.

Some people have the typical electrical changes on an electrocardiogram, or ECG, but never develop symptoms. This is often called a WPW pattern rather than WPW syndrome. WPW syndrome generally means that the extra pathway has caused symptoms or a documented abnormal rhythm.

Many people with WPW remain well or can be treated successfully. It matters because some rapid rhythms cause fainting or affect quality of life. In uncommon cases, the pathway can allow a dangerously fast rhythm to reach the heart's lower chambers.

Symptoms

Symptoms often begin and end suddenly. They may last for a few seconds, continue for hours, or happen in repeated episodes. Some people have frequent episodes, while others go years without one.

Possible symptoms include:

A common rhythm in WPW is atrioventricular re-entrant tachycardia. This means an electrical signal is repeatedly travelling around a loop involving the normal pathway and the extra pathway.

WPW can also occur with atrial fibrillation, an irregular rhythm that begins in the heart's upper chambers. When electrical signals pass rapidly through the extra pathway, the lower chambers may beat extremely quickly. This is less common but needs urgent assessment.

Babies and young children cannot describe palpitations. Signs may include unusual sleepiness, poor feeding, rapid breathing, pale or bluish skin, or a heartbeat that seems very fast. These symptoms can have many causes and need medical assessment.

Some people have no symptoms. Their WPW pattern may be found during an ECG done for another reason.

- A racing, pounding, or fluttering heartbeat
- A pulse that suddenly becomes very fast
- Dizziness or light-headedness
- Shortness of breath
- Chest discomfort
- Weakness, sweating, or anxiety during an episode
- Fainting or nearly fainting

Causes and risk factors

The extra pathway usually forms while the heart is developing before birth. It is therefore considered congenital, meaning present from birth, even if symptoms do not appear until later.

For most people, the reason the pathway formed is unknown. It is not caused by stress, diet, exercise, or anything a parent did during pregnancy.

Most cases are not inherited. Rarely, WPW runs in families or is linked to a genetic condition affecting the heart muscle. WPW is also seen more often in people with certain structural heart differences, particularly Ebstein anomaly, which affects one of the heart valves.

Having an extra pathway does not guarantee that symptoms will develop. The risk depends partly on how quickly the pathway can carry electrical signals and whether it can support a repeating electrical circuit.

Diagnosis

The main test is a 12-lead ECG, which records the heart's electrical activity through small sticky pads placed on the skin.

Between episodes, an ECG may show a short delay between electrical activation of the upper and lower chambers, followed by a slurred start to the lower-chamber signal. This slurred area is called a delta wave . Together, these changes are known as pre-excitation because part of the lower heart is activated earlier than usual.

The WPW pattern may come and go, so a single ECG can sometimes look normal. Other tests may include:

An electrophysiology study may be offered when more information is needed or when catheter ablation is being considered. Thin wires are passed through a blood vessel into the heart. They record electrical signals and can show where the extra pathway is located and how rapidly it conducts.

The same symptoms can be caused by other rhythm conditions, anxiety, thyroid problems, anaemia, medicines, or stimulant drugs. An ECG recorded during symptoms can help identify the actual rhythm rather than relying on symptoms alone.

- A portable heart monitor worn for a day or longer
- An event monitor used when symptoms happen less often
- An exercise ECG to see how the pathway behaves as heart rate rises
- An echocardiogram, which uses ultrasound to examine heart structure
- Blood tests to look for other causes of a fast heartbeat

Treatment and management

Treatment depends on symptoms, the type of rhythm, the pathway's electrical features, other heart conditions, and personal preferences.

Someone with a WPW pattern but no symptoms may not need immediate treatment. A heart rhythm specialist may use an ECG, exercise test, monitor, or electrophysiology study to estimate risk. Lower-risk findings may be managed with follow-up rather than a procedure.

During some episodes of regular rapid heartbeat, actions called vagal manoeuvres can help slow electrical conduction through the heart. An example is bearing down as if having a bowel movement. These should be learned from a healthcare professional. Do not massage your own neck, because carotid massage can cause harm.

If an episode does not stop or causes concerning symptoms, treatment in a medical setting may include rhythm medicines or electrical cardioversion. Cardioversion uses a controlled electrical shock to restore a safer rhythm.

Some commonly used heart-rate medicines can be unsafe during atrial fibrillation that is travelling through a WPW pathway. Emergency staff need to know that you have WPW so they can identify the rhythm and choose suitable treatment. Do not take someone else's heart medicine or an extra dose of your own medicine unless this is part of your agreed plan.

Catheter ablation is the main treatment for people with troublesome symptoms or a pathway considered higher risk. During the procedure, a specialist guides catheters into the heart and uses heat or freezing energy to disable the extra pathway. It can provide a lasting cure without open-heart surgery.

Ablation is generally effective, but it is still an invasive procedure. Possible problems include bleeding or bruising where the catheter entered, blood vessel damage, injury to the heart's normal electrical system, and recurrence of the pathway. The specific risks depend partly on where the pathway lies.

Rhythm-control medicine may be considered when ablation is not wanted, cannot be performed, or has not worked. The choice requires specialist advice because medicines affect different types of rhythm in different ways.

Complications

Most people with WPW do not develop serious complications. However, repeated episodes can disrupt sleep, work, school, exercise, and emotional well-being.

A very fast rhythm may lower blood flow to the brain and cause fainting. This can lead to injury,

particularly while driving, swimming, climbing, or operating equipment.

Rarely, frequent or prolonged rapid rhythms weaken the heart muscle. This is called tachycardia-induced cardiomyopathy. Heart function may improve once the abnormal rhythm is controlled.

The most serious complication occurs when atrial fibrillation sends very rapid signals through the extra pathway. This can develop into ventricular fibrillation, in which the lower heart chambers quiver instead of pumping blood. Ventricular fibrillation causes cardiac arrest and requires immediate emergency treatment. This outcome is uncommon, but it is why unexplained fainting and certain high-risk pathway findings need careful assessment.

Prevention

The extra electrical pathway develops before birth, so WPW cannot usually be prevented.

Avoiding caffeine, alcohol, nicotine, or stimulant like methylphenidate or lisdexamfetamine products does not remove the pathway. Some people notice that one of these substances makes episodes more likely, while others notice no connection. Keeping a record of symptoms and possible triggers may help identify a personal pattern.

Check before using stimulant-containing supplements or cold remedies if you have had rapid rhythms. Do not stop prescribed medicine without medical advice.

Most relatives do not need testing because most WPW is not inherited. A specialist may discuss family assessment when several close relatives have WPW, unexplained fainting, or sudden cardiac arrest, or when an inherited heart condition is suspected.

Living with it and what to expect

The course of WPW differs from person to person. Some have only one episode. Others have episodes that return over months or years. Symptoms may first appear in childhood, adolescence, or adulthood, even though the pathway has been present since birth.

A low-risk WPW pattern may remain symptom-free and only need periodic review. Follow-up may include discussing new symptoms and repeating heart tests when appropriate. Seek reassessment if episodes become longer, more frequent, or more severe.

After successful ablation, many people no longer have WPW-related rapid rhythms and can return to usual activities. Follow-up may include an ECG and review of any continuing palpitations. An extra pathway can occasionally recover, and palpitations after ablation may

also come from a different rhythm.

Regular physical activity is often possible. Competitive sport, high-risk work, and activities where fainting would be dangerous may require specialist assessment before participation. Driving restrictions are based on symptoms such as fainting, the type of vehicle, and local rules.

Pregnancy can change heart rate and make palpitations more noticeable. People with known WPW can usually plan pregnancy, but it is helpful to discuss rhythm history and medicines in advance. New or severe symptoms during pregnancy need prompt assessment.

When to get medical help

Arrange a routine medical appointment if you have repeated episodes of a sudden racing heartbeat, even if they stop on their own. Also arrange follow-up if you have known WPW and your symptoms change, return after ablation, or affect daily activities.

Seek urgent medical care for a rapid heartbeat that does not settle promptly, is different from previous episodes, or occurs with marked weakness or light-headedness. A first sustained episode should also be assessed so the rhythm can be recorded.

Call emergency services if a rapid or irregular heartbeat occurs with:

If someone is unresponsive and not breathing normally, call emergency services and begin cardiopulmonary resuscitation if you are able. Use an automated external defibrillator if one is available.

- Fainting or loss of consciousness
- Chest pain or pressure
- Severe difficulty breathing
- Confusion, collapse, or extreme weakness
- Pale, blue, or grey skin
- Signs of cardiac arrest, such as unresponsiveness and abnormal breathing

Common questions

Is WPW syndrome serious?

It can be, but serious complications are uncommon. Risk is higher when the extra pathway can carry electrical signals very quickly or when symptoms include fainting. Heart rhythm testing

can help assess this.

Can WPW go away on its own?

The electrical pathway may stop conducting in some people, particularly as they age, but this cannot be assumed. Symptoms can also disappear for years and later return. Catheter ablation is the treatment that can intentionally remove the pathway.

Can I exercise with WPW?

Many people can exercise normally. If exercise triggers palpitations, you have fainted, or you take part in competitive or high-risk sport, get a specialist assessment before continuing. Stop activity and seek help if symptoms include chest pain, severe breathlessness, or near-fainting.

Does caffeine trigger WPW episodes?

Caffeine does not cause the extra pathway. It may contribute to palpitations in some people, but the effect is not the same for everyone. A symptom diary can help show whether caffeine has a consistent effect for you.

Is WPW inherited?

Usually not. Rare family forms exist, sometimes as part of a genetic condition affecting the heart muscle. Tell your healthcare team if several relatives have WPW, unexplained fainting, or sudden cardiac arrest.

Can WPW come back after ablation?

Yes, although ablation can provide a lasting cure. The treated pathway may occasionally recover. New palpitations can also be caused by harmless extra beats or another rhythm, so an ECG or heart monitor may be needed to identify the cause.

Sources

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