CONDITION

Ventricular tachycardia

Ventricular tachycardia is a fast heart rhythm that starts in the heart's lower chambers.

WHAT IT IS
Fast rhythm beginning in the heart's lower chambers

BODY SYSTEM
Heart and circulation

MAIN SYMPTOMS
Palpitations, dizziness, breathlessness, fainting

WHAT CAUSES IT
Heart damage, electrical disorders, medicines, or electrolyte imbalance

HOW IT IS DIAGNOSED
Electrocardiogram or implanted heart-device recording

MAIN TREATMENT
Rhythm correction, medicines, ablation, or implanted defibrillator

CAN IT BE CURED?
Sometimes - ablation or correcting a trigger stops episodes

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

LONG-TERM OUTLOOK
Often manageable, but heart disease raises sudden-death risk

Overview

Ventricular tachycardia, often shortened to VT, is an abnormally fast heart rhythm that begins in the ventricles. These are the two lower chambers that pump blood to the lungs and the rest of the body.

During VT, electrical signals travel through the ventricles too quickly or along an abnormal pathway. The heart may not have enough time to fill between beats. This can reduce the amount of blood reaching the brain and other organs.

Some episodes last only a few beats and stop without treatment. This is called nonsustained VT . An episode lasting longer, or one that needs treatment because it is causing problems, is called sustained VT .

VT may have a regular-looking pattern, known as monomorphic VT, or a changing pattern,

known as polymorphic VT. A particular form of polymorphic VT called torsades de pointes is often linked to a prolonged electrical recovery time in the heart, called a long QT interval.

The importance of VT differs from person to person. Short episodes can sometimes occur without causing immediate harm. Sustained VT can cause fainting, cardiac arrest, or sudden death, particularly when the heart has been damaged by a previous heart attack or another heart condition.

Symptoms

VT does not always cause noticeable symptoms, especially when an episode is brief. When symptoms occur, they may begin and end suddenly.

Possible symptoms include:

Symptoms occur because the heart may be pumping less blood than the body needs. How you feel is affected by the rhythm's speed and duration, as well as the health of your heart.

A prolonged or severely disruptive rhythm can cause cardiac arrest. The person becomes unresponsive and is not breathing normally. This is an emergency requiring immediate resuscitation.

- A fast, pounding, fluttering, or racing heartbeat
- Dizziness, light-headedness, or weakness
- Shortness of breath
- Chest pain or pressure
- Sweating, nausea, or looking pale
- Confusion, near-fainting, or fainting

Causes and risk factors

VT commonly develops because disease or injury has changed the heart muscle. Scar tissue can interfere with the normal movement of electrical signals, allowing a rapid rhythm to circulate through the ventricles.

Possible underlying causes include:

VT can also occur because of an inherited problem affecting the heart's electrical system. Examples include long QT syndrome, Brugada syndrome and catecholaminergic polymorphic VT. These conditions may occur even when the heart's structure appears normal.

Other possible triggers include very low potassium or magnesium levels, reduced blood flow to the heart, severe illness, and some medicines or drug combinations. Stimulant drugs such as cocaine or methamphetamine can also cause dangerous rhythms.

Occasionally, VT occurs in a heart without detectable structural disease. This is called idiopathic VT . It often starts from a particular small area of the heart and may respond well to catheter ablation.

- A previous heart attack and the scar it leaves
- Cardiomyopathy, meaning disease of the heart muscle
- Heart failure or a weakened heart
- Inflammation of the heart muscle, called myocarditis
- Heart conditions present from birth
- Previous heart surgery

Diagnosis

An electrocardiogram, or ECG, is the main test used to confirm VT. It records the heart's electrical activity through sticky pads placed on the skin. The ECG is most useful when it captures the rhythm during an episode.

Because VT may stop before an ECG is performed, longer monitoring may be needed. A portable Holter monitor may record continuously for a day or longer. An event monitor can be worn for a longer period, while an implanted loop recorder can monitor the rhythm beneath the skin. Pacemakers and implanted defibrillators can also store records of abnormal rhythms.

Once VT has been identified, tests may look for its cause and assess the heart. These may include:

An electrophysiology study may sometimes be used. During this hospital procedure, thin tubes called catheters are guided into the heart to record electrical signals and identify where the rhythm starts.

A wide-complex fast rhythm on an ECG can have more than one cause. Clinicians generally treat an uncertain rhythm cautiously because VT requires prompt recognition.

- Blood tests for electrolytes, thyroid function, signs of illness, or heart injury
- An echocardiogram, which uses sound waves to examine heart structure and pumping
- Coronary imaging to check the arteries supplying the heart

- Cardiac magnetic resonance imaging to look for inflammation or scar tissue
- Exercise testing when symptoms appear to be linked to physical activity
- Genetic testing when an inherited rhythm condition is suspected

Treatment and management

Treatment depends on whether the episode is happening now, how it affects blood circulation, what caused it, and the chance that it will return.

If VT is causing low blood pressure, chest pain, severe breathlessness, confusion, or loss of consciousness, the rhythm needs urgent correction. A controlled electrical shock called cardioversion may be used when a pulse is present. If cardiac arrest has occurred, treatment includes cardiopulmonary resuscitation, or CPR, and defibrillation.

Some people who remain stable during an episode receive rhythm-control medicine in hospital. Torsades de pointes has specific treatment, including correction of triggers such as electrolyte abnormalities or medicines that prolong the QT interval.

Longer-term management may include treatment for an underlying heart problem and one or more of the following approaches.

Medicines: Antiarrhythmic medicines may reduce the number or duration of episodes. They can also have important side effects and interactions, so monitoring is often needed. Medicines should not be stopped or changed without medical advice.

Catheter ablation: A specialist guides catheters into the heart and uses heat or freezing to destroy a small area causing or maintaining the rhythm. Ablation may stop some forms of VT. In other cases, especially when there is extensive heart scarring, it may reduce episodes without removing all future risk.

Implantable cardioverter-defibrillator: An ICD is a small device placed under the skin and connected to the heart. It monitors the rhythm and can use rapid pacing or a shock to stop dangerous VT. An ICD treats a rhythm when it happens, but it does not prevent every episode or cure the underlying heart condition.

Treatment may also involve restoring blood flow to the heart, managing heart failure, correcting electrolyte levels, or replacing a medicine that is affecting the rhythm.

Complications

The main immediate concern is that VT may prevent the heart from pumping enough blood.

This can cause low blood pressure, fainting, injury from a fall, or damage to organs.

VT can deteriorate into ventricular fibrillation. In this rhythm, the ventricles quiver rather than pump. Ventricular fibrillation causes cardiac arrest and is fatal without rapid treatment.

Frequent or prolonged episodes can weaken the heart over time. Repeated ICD shocks can also be painful and emotionally distressing, even though the device may be providing life-saving treatment.

Complications are more likely when VT is sustained, causes symptoms, or occurs alongside significant heart disease. A brief recording of nonsustained VT does not by itself show what the long-term risk will be. The underlying heart condition and test results are important.

Prevention

VT cannot always be prevented. Scar tissue from an earlier heart attack may remain, and inherited electrical conditions cannot be prevented through lifestyle changes.

When a reversible trigger is found, addressing it can reduce the chance of another episode. This may include correcting an electrolyte imbalance, treating reduced blood flow to the heart, or reviewing a medicine that affects the QT interval. Do not stop a prescribed medicine on your own.

Managing an existing heart condition can also reduce risk. This may involve taking prescribed medicines, attending follow-up appointments, and following an agreed plan for activity, smoking cessation, alcohol, and treatment of blood pressure or cholesterol.

If an inherited rhythm condition is confirmed, close relatives may be offered heart tests or genetic counselling. This does not mean that every relative has the condition.

Living with it and what to expect

The course of VT is closely linked to its cause. An episode caused by a temporary trigger may not return once that trigger is corrected. Idiopathic VT may respond well to ablation. VT linked to permanent heart scarring or cardiomyopathy may remain a long-term risk requiring monitoring, medicine, an ICD, or further procedures.

Follow-up may include ECGs, heart imaging, blood tests, device checks, and review of symptoms. Treatment may change if episodes become more frequent, the heart's pumping ability changes, or an ICD records new rhythms.

Many people return to everyday activities after evaluation and treatment. Physical activity may

need to be adjusted according to the underlying condition. Competitive sports or intense exercise can carry extra risk in some inherited rhythm disorders, while appropriate exercise may be helpful for many people with other heart conditions.

Driving restrictions may apply after sustained VT, fainting, or an ICD shock. The rules differ by location and by whether you drive privately or professionally. Your cardiology team can explain the rules that apply to you.

It is common to worry about another episode or an ICD shock. Cardiac rehabilitation, psychological support, and clear instructions about what to do during symptoms can help. Tell your care team if fear is limiting sleep, activity, work, or social life.

When to get medical help

Call emergency services now if you or someone else has a rapid heartbeat together with:

If someone is unresponsive and not breathing normally, call emergency services, begin CPR if you can, and use an automated external defibrillator if one is available.

If you have an ICD, seek emergency help after a shock if you still feel unwell, have chest pain or breathlessness, faint, or receive more than one shock. Follow the individual emergency plan provided by your device clinic.

Arrange prompt medical assessment for new episodes of a racing heartbeat, unexplained fainting, or repeated dizziness, even if the symptoms have stopped. Routine cardiology follow-up remains important when VT has already been diagnosed, including after symptom-free periods.

- Fainting or near-fainting
- Chest pain or pressure
- Severe shortness of breath
- Confusion, marked weakness, or difficulty staying awake
- Collapse or unresponsiveness

Common questions

Is ventricular tachycardia always life-threatening?

No. Some brief episodes stop on their own and do not disturb circulation. Sustained VT, symptoms such as fainting, and underlying structural heart disease increase the risk of cardiac

arrest. Each recorded episode needs to be interpreted in its clinical setting.

Can anxiety cause ventricular tachycardia?

Anxiety commonly causes a fast heartbeat, but this is usually sinus tachycardia, in which the heart's normal pacemaker speeds up. Stress hormones may trigger arrhythmias in some people with an existing electrical condition, but anxiety alone should not be assumed to explain a recorded VT episode.

Can ventricular tachycardia go away permanently?

Sometimes. VT caused by a reversible trigger may stop once the trigger is removed. Catheter ablation can eliminate some forms, especially those starting from one defined area. VT caused by widespread scar or progressive heart disease may return despite treatment.

What is the difference between VT and ventricular fibrillation?

During VT, the ventricles beat rapidly but may still produce some blood flow. During ventricular fibrillation, electrical activity is chaotic and the heart does not pump effectively. Ventricular fibrillation causes cardiac arrest and requires immediate CPR and defibrillation.

Can I exercise after ventricular tachycardia?

Many people can exercise after assessment, but the safe type and intensity depend on the cause of VT, heart function, symptoms, and treatment. Exercise advice is especially important if episodes happen during activity or an inherited electrical condition is suspected.

Will an ICD stop ventricular tachycardia from happening?

An ICD does not usually prevent VT from starting. It detects dangerous rhythms and attempts to stop them with rapid pacing or a shock. Medicines or ablation may be used alongside an ICD to reduce repeated episodes.

Sources

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