CONDITION

Obstructive hypertrophic cardiomyopathy

Obstructive hypertrophic cardiomyopathy is heart muscle thickening that narrows the path of blood leaving the heart.

WHAT IT IS
Heart muscle thickening that obstructs blood leaving the heart

BODY SYSTEM
Heart and circulation

MAIN SYMPTOMS
Breathlessness, chest pain, palpitations, fainting

WHAT CAUSES IT
Usually inherited heart-muscle gene changes

HOW IT IS DIAGNOSED
Echocardiogram showing thickening and dynamic outflow obstruction

MAIN TREATMENT
Medicines, specialist procedures, and complication prevention

CAN IT BE CURED?
No - treatment controls obstruction and risks

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

LONG-TERM OUTLOOK
Often manageable, with lifelong monitoring for changing risks

Overview

Obstructive hypertrophic cardiomyopathy is a condition in which part of the heart muscle becomes unusually thick. It is often shortened to obstructive HCM.

The thickening usually affects the wall between the heart's two lower chambers. This wall is called the septum. As the heart contracts, the thickened muscle can narrow the route through which blood leaves the left lower chamber and enters the aorta, the body's main artery.

The blockage is called left ventricular outflow tract obstruction. It is often dynamic , meaning its severity can change. It may be mild while you are resting but become greater during exercise, dehydration, or other situations that make the heart contract more forcefully.

A nearby heart valve, called the mitral valve, may also be pulled toward the thickened septum

during each heartbeat. This can worsen the blockage and sometimes allows blood to leak backward through the valve.

Some people have no symptoms. Others develop breathlessness, chest discomfort, tiredness, palpitations, or fainting. The condition also increases the risk of certain abnormal heart rhythms. Regular specialist follow-up matters even when you feel well because symptoms and risks can change over time.

Symptoms

Symptoms may begin at any age. Their severity does not always match the amount of heart-muscle thickening.

Possible symptoms include:

Symptoms can become more noticeable during strenuous activity, in hot weather, or when you are dehydrated. Large meals and alcohol can also trigger symptoms in some people.

Chest pain, breathlessness, or fainting can have many causes. These symptoms do not by themselves show that you have obstructive HCM.

- Breathlessness, especially during activity
- Chest pressure or pain
- Palpitations, such as a racing, pounding, or irregular heartbeat
- Dizziness, light-headedness, or fainting
- Unusual tiredness or reduced ability to exercise
- Breathlessness when lying flat or swelling in the legs, usually with more advanced heart failure

Causes and risk factors

Obstructive HCM is commonly caused by a change in a gene that helps build heart-muscle cells. These inherited gene changes affect proteins involved in muscle contraction.

The condition is often passed down in an autosomal dominant pattern. This means a child can inherit the relevant gene change from one affected parent. However, inheriting a gene change does not predict exactly when thickening will develop or how severe it will become.

Sometimes genetic testing does not find a cause. This does not rule out HCM or mean that the condition cannot run in the family.

Having a parent, sibling, or child with HCM increases the chance of having it. Relatives may carry the same gene change without symptoms or visible heart thickening at the time they are first tested.

Other conditions, including long-standing high blood pressure, a narrowed aortic valve, and certain metabolic or storage conditions, can also cause heart-muscle thickening. Clinicians consider these alternatives before confirming HCM.

Diagnosis

An echocardiogram is the main test used to diagnose obstructive HCM. This ultrasound scan shows the thickness and movement of the heart muscle, how the valves work, and whether blood flow leaving the heart is obstructed.

Because the obstruction can change, measurements may be taken while you are resting and while you perform a manoeuvre that alters blood flow. An exercise echocardiogram may be used when resting tests do not explain your symptoms.

Other tests may include:

A negative genetic test does not exclude HCM. If a specific gene change is found, close relatives may be offered targeted testing. If genetic testing is negative or not performed, relatives may still need periodic ECGs and heart imaging.

The assessment also considers the risk of dangerous heart rhythms and sudden cardiac death. This involves more than a single test. Factors may include fainting history, family history, heart thickness, heart pumping function, rhythm-monitor results, and MRI findings.

- An electrocardiogram, or ECG, to record the heart's electrical activity
- A portable ECG monitor to look for intermittent abnormal rhythms
- Cardiac magnetic resonance imaging, or cardiac MRI, for detailed images and information about scarring
- Exercise testing to assess symptoms, blood pressure, heart rhythm, and physical capacity
- Genetic testing when an inherited cause is suspected

Treatment and management

Treatment aims to reduce symptoms, improve blood flow, and lower the risk of complications. The most appropriate approach depends on your symptoms, the degree of obstruction, heart

rhythm, other medical conditions, and personal preferences.

Medicines are often the first treatment for symptoms. Beta blockers like metoprolol or propranolol slow the heart and reduce how forcefully it contracts. Certain calcium-channel blockers, such as verapamil or diltiazem, may be considered in some people. Other medicines may be added under specialist supervision.

Mavacamten is a cardiac myosin inhibitor. It reduces excessive interaction between proteins that make the heart contract. It may be an option for selected adults who continue to have symptoms from obstructive HCM. It requires regular echocardiograms because it can reduce the heart's pumping strength. It also interacts with several medicines, so a full medication review is important.

Diuretics like furosemide or hydrochlorothiazide , sometimes called water tablets, may help fluid buildup but are generally used cautiously. Removing too much fluid can worsen the obstruction. Some blood-pressure and heart medicines can also affect blood flow through the heart. Do not stop a prescribed medicine without discussing it with the clinician managing your care.

If symptoms remain limiting despite appropriate medicines, a procedure to reduce the thickened septum may be considered:

The choice depends on your anatomy, age, other heart problems, and the experience of the treatment centre. These procedures can greatly reduce obstruction, but they do not remove the underlying tendency to HCM.

An implantable cardioverter-defibrillator, or ICD, may be recommended for people with a higher risk of life-threatening rhythms. It monitors the heartbeat and can deliver treatment if a dangerous rhythm occurs. An ICD prevents sudden cardiac death; it does not directly relieve the obstruction.

- Septal myectomy is open-heart surgery that removes part of the thickened muscle.
- Alcohol septal ablation uses a catheter to deliver alcohol into a small artery supplying the thickened area. This creates a controlled scar that makes the septum thinner.

Complications

Many people do not develop major complications. Possible problems include:

New symptoms do not always mean the condition is worsening. An assessment can check for rhythm changes, increased obstruction, valve leakage, or another cause.

- Atrial fibrillation: an irregular rhythm in the heart's upper chambers that can cause palpitations and increase stroke risk
- Ventricular arrhythmias: fast rhythms arising from the lower chambers
- Heart failure: difficulty filling or pumping effectively, causing breathlessness or fluid retention
- Mitral valve leakage: backward blood flow through the mitral valve
- Stroke: most often linked to atrial fibrillation and blood clots
- Sudden cardiac death: uncommon overall, but more likely in people with specific risk factors

Prevention

Obstructive HCM caused by an inherited gene change cannot currently be prevented through diet, exercise, or lifestyle choices. A person can develop it even if they have always looked after their heart health.

Family screening can identify HCM or a related gene change before symptoms begin. Genetic counselling can help you understand inheritance, testing choices, and what a result may mean for relatives. It can also explain reproductive options without directing you toward a particular choice.

Regular follow-up, appropriate treatment, and rhythm monitoring may help prevent or reduce complications. Staying reasonably hydrated and avoiding sudden, extreme exertion may reduce symptom triggers for some people.

Living with it and what to expect

Obstructive HCM is a lifelong condition. Heart thickening does not usually return to normal on its own, but treatment can reduce obstruction and improve symptoms.

Some people remain stable and active for many years. Others need changes in medicine or a septal reduction procedure as symptoms develop. The risk of abnormal rhythms can also change, which is why follow-up continues even after successful treatment of the obstruction.

Routine reviews may include an ECG, echocardiogram, rhythm monitoring, and discussion of symptoms. Tell your care team about fainting, new palpitations, reduced exercise tolerance, or a family member's sudden unexplained death.

Regular recreational exercise is often possible and can support general health. Advice about strenuous or competitive activity should be personalised rather than based on a blanket ban. Shared decision-making is especially important if you take part in high-intensity sport.

Carry an up-to-date list of medicines. Before starting prescription, over-the-counter, or herbal products, check whether they could affect blood pressure, fluid levels, heart rhythm, or HCM medicines.

When to get medical help

Arrange a routine appointment if you develop mild but persistent breathlessness, reduced exercise capacity, occasional palpitations, or new ankle swelling. Also seek follow-up if existing symptoms are becoming more frequent.

Request prompt medical assessment for unexplained fainting, especially during exercise, or for a new sustained racing or irregular heartbeat.

Call emergency services for:

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.

- Collapse or loss of consciousness
- Severe or rapidly worsening breathlessness
- Chest pain or pressure that is severe, persistent, or accompanied by sweating or nausea
- A fast heartbeat with faintness, chest pain, or breathlessness
- Signs of stroke, such as facial drooping, arm weakness, or difficulty speaking

Common questions

Is obstructive hypertrophic cardiomyopathy the same as an enlarged heart?

No. HCM means that the heart muscle is unusually thick. An enlarged heart often means that one or more chambers have stretched or widened. These changes can occur for different reasons.

Can obstructive HCM be cured?

There is no current cure for the underlying condition. Medicines and septal reduction procedures can reduce obstruction and symptoms. Ongoing monitoring is still needed after successful treatment.

Can I exercise with obstructive HCM?

Many people can take part in regular recreational exercise. The safest type and intensity depend on symptoms, obstruction, rhythm history, and treatment. Competitive or very intense exercise needs an individual discussion with an HCM specialist.

Will my children inherit it?

They may. HCM is often inherited, but the chance for a particular family depends on whether a causative gene change is found. A genetic counsellor can explain your family's results and testing options.

Does obstructive HCM shorten life expectancy?

Many people live for decades with good quality of life, particularly with monitoring and treatment. Individual outlook is influenced by heart rhythm risk, pumping function, symptoms, and response to treatment.

Can alcohol make symptoms worse?

It can in some people. Alcohol may contribute to dehydration, lower blood pressure, or trigger atrial fibrillation. Your care team can discuss what is reasonable based on your symptoms, rhythm history, and medicines.

Sources

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