CONDITION

Coronary artery spasm

Coronary artery spasm is a temporary tightening of a heart artery that reduces blood flow to the heart muscle.

WHAT IT IS
Temporary tightening of a heart artery

BODY SYSTEM
Heart and circulation

MAIN SYMPTOMS
Resting chest pain, breathlessness, sweating, faintness

WHAT CAUSES IT
Abnormal artery muscle tightening, often without clear trigger

HOW IT IS DIAGNOSED
ECG during pain, coronary angiography with spasm provocation

MAIN TREATMENT
Calcium channel blockers, nitrates, and trigger avoidance

CAN IT BE CURED?
Sometimes - episodes may stop but can recur

IS IT AN EMERGENCY?
Sometimes - new or persistent chest pain

LONG-TERM OUTLOOK
Usually manageable, with ongoing heart and rhythm risks

Overview

Coronary artery spasm is a sudden, temporary tightening of an artery that supplies the heart muscle. It is also called vasospastic angina or variant angina.

During a spasm, the muscular wall of the artery contracts. This narrows the space inside the artery and reduces blood flow. The spasm often lasts for a few minutes and then releases.

Unlike common angina caused by fixed fatty narrowing, coronary artery spasm often happens while you are resting. It may occur in arteries that look normal, although spasm and fatty artery disease can exist together.

Reduced blood flow can cause chest pain. A prolonged spasm can damage the heart muscle or disturb the heart's electrical rhythm. These complications are not inevitable, but they are why

recurring symptoms need medical assessment and treatment.

Symptoms

The most common symptom is chest discomfort at rest. It may feel like pressure, squeezing, tightness, heaviness, or burning. Some people describe pain rather than pressure.

Episodes often happen from late night to early morning. They may occur in clusters, with several episodes over days or weeks followed by a symptom-free period. Exercise can trigger symptoms in some people, but resting symptoms are more typical.

Other possible symptoms include:

Symptoms may improve after the artery relaxes or after taking a prescribed fast-acting nitrate. However, it is not possible to tell from symptoms alone whether chest pain is caused by spasm, a heart attack, or another condition.

Some spasms cause temporary changes on an electrocardiogram, or ECG, without obvious symptoms. An ECG records the heart's electrical activity.

- Pain spreading to an arm, shoulder, neck, jaw, back, or upper abdomen
- Shortness of breath
- Sweating, nausea, or unusual weakness
- A fast, pounding, or irregular heartbeat
- Dizziness or fainting

Causes and risk factors

A spasm happens when the smooth muscle in a coronary artery contracts too strongly. The exact reason is not always clear. Problems with the artery lining, called the endothelium, and an artery muscle that reacts too easily may both contribute.

Smoking is an important risk factor. Spasm can also be associated with:

Not everyone has an obvious trigger. Traditional risks for fatty artery disease, such as high cholesterol or diabetes, do not fully explain coronary spasm. However, a person can have both conditions.

Coronary artery spasm is not usually considered an inherited condition. A family history of heart disease may still matter because it can point to other heart and artery risks.

- Cocaine, amphetamines, and other stimulant drugs
- Heavy alcohol use or alcohol withdrawal
- Exposure to cold
- Emotional stress or rapid overbreathing
- Medicines that tighten blood vessels, including some migraine treatments and decongestants
- Certain chemotherapy medicines
- Low magnesium levels in some situations

Diagnosis

Diagnosis starts with a detailed account of when symptoms happen, how long they last, and what relieves them. Your clinician may also review medicines, supplements, smoking, alcohol, and stimulant use.

An ECG taken during chest pain can show temporary changes caused by reduced blood flow. The ECG may return to normal after the spasm stops. Because episodes are brief, a standard ECG between episodes can be normal.

A portable ECG monitor may be used to record your heart rhythm over one or more days. Blood tests, including troponin, can check for heart muscle injury. Troponin is a protein released into the blood when heart cells are damaged.

Coronary angiography uses contrast dye and X-rays to show the heart arteries. It can identify fixed narrowing and other causes of chest pain. If the arteries do not show an explanation, controlled spasm provocation may be considered in a specialist heart catheter laboratory.

During provocation testing, a medicine such as acetylcholine is given into a coronary artery while the medical team watches the artery, ECG, and symptoms. A clear temporary narrowing that reproduces symptoms and ECG changes supports the diagnosis. The team then gives medicine to relax the artery. This test has risks and is not needed for everyone.

Treatment and management

Treatment aims to prevent spasms, relieve episodes, and lower the risk of heart muscle injury or an abnormal rhythm.

Calcium channel blockers like amlodipine or diltiazem are the main preventive medicines. They

relax artery muscle and reduce how often spasms occur. A long-acting nitrate may be added when symptoms continue. Nitrates widen blood vessels.

Some people are given a fast-acting nitrate to use during an episode. Follow the instructions provided with your medicine and your emergency plan. Chest pain that does not settle as expected still needs urgent assessment.

Treatment also includes avoiding known triggers. This may mean stopping smoking, avoiding stimulant drugs, and reviewing medicines that can tighten blood vessels. Do not stop a prescribed medicine without medical advice.

Beta blockers like metoprolol or propranolol are often used for other heart conditions, but some can worsen coronary spasm, especially when used without a medicine that relaxes the arteries. If you take a beta blocker, discuss it during your medication review rather than stopping it suddenly.

Treatment for high cholesterol, high blood pressure, or fixed coronary artery narrowing may also be needed. These treatments address related heart risks, even though they do not replace medicine that directly prevents spasm.

If episodes continue, a heart specialist may adjust the medicine type, timing, or combination and reconsider whether another condition is contributing.

Complications

Most brief episodes end without permanent damage. Possible complications include:

Risk is higher when spasms affect several arteries, cause serious rhythm disturbances, or occur alongside major fixed artery narrowing. Previous cardiac arrest or fainting during an episode also requires specialist assessment.

- Heart attack if blood flow is reduced for long enough
- Dangerous heart rhythms arising from the upper or lower heart chambers
- Fainting due to a rhythm problem or a temporary fall in blood flow
- Sudden cardiac arrest in severe cases
- Ongoing chest pain that limits sleep, work, or physical activity

Prevention

Coronary artery spasm cannot always be prevented because many people have no clear

trigger or avoidable cause.

If you smoke, stopping can reduce a major known risk. Avoid cocaine, amphetamines, and other non-prescribed stimulants. If alcohol, cold exposure, or a particular medicine appears linked to episodes, discuss a safe plan for avoiding or managing that trigger.

Take preventive medicine consistently if it has been prescribed. Stopping it suddenly can allow symptoms to return. Regular reviews are useful if symptoms change, side effects occur, or you start another medicine.

Managing blood pressure, cholesterol, diabetes, sleep, and physical activity can support overall heart health. These steps do not guarantee that spasms will stop.

Living with it and what to expect

The course differs from person to person. Some people have a short period of episodes followed by a long remission. Others have symptoms that return over months or years, especially if preventive medicine is stopped or a trigger continues.

Many people can continue normal daily activities once symptoms are controlled. Your care team may advise how to return to exercise based on your symptoms, test results, and whether you also have fixed artery disease.

Keep a brief symptom record if episodes recur. Note the time, activity, possible trigger, duration, and response to prescribed medicine. This can help identify patterns without assuming that every episode has the same cause.

Routine follow-up may include a review of symptoms, blood pressure, medicines, side effects, and other heart risks. Report episodes that become more frequent, last longer, wake you more often, or begin during physical activity.

Some people need long-term treatment even after a symptom-free period. Do not use the absence of pain as proof that it is safe to stop medicine. Changes should be planned with the clinician managing your heart care.

The outlook is often good when spasms are recognised, triggers are reduced, and preventive treatment works. A history of serious rhythm problems, heart attack, or widespread spasm may mean closer follow-up is needed.

When to get medical help

Call emergency services for new, severe, or unexplained chest discomfort. Seek emergency

help if chest pain:

Do not drive yourself when a heart attack or dangerous rhythm may be occurring. Chest pain from spasm can feel the same as chest pain from a blocked artery, so it is safer to treat uncertain symptoms as an emergency.

Arrange routine medical follow-up if established episodes are becoming more frequent, changing pattern, or affecting sleep and daily activities. Also request a medication review if you have troublesome side effects or have started a drug that may affect blood vessels.

- Lasts more than a few minutes or keeps returning
- Does not improve as expected after prescribed rescue medicine
- Occurs with breathlessness, sweating, vomiting, confusion, or marked weakness
- Happens with fainting or a fast or irregular heartbeat
- Feels different from your usual episodes

Common questions

Is coronary artery spasm the same as a blocked artery?

No. A spasm is a temporary tightening of the artery wall. A blocked artery usually contains a fixed build-up of fatty material or a blood clot. Both problems can reduce blood flow, and they can occur together.

Can coronary artery spasm cause a heart attack?

Yes. If a spasm is severe or lasts long enough, it can injure the heart muscle. Most brief episodes do not cause a heart attack, but symptoms alone cannot show whether damage is occurring.

Why does it happen at night?

The body's nerve and hormone activity changes during sleep and in the early morning. These changes can affect how strongly blood vessels tighten. Night-time timing is common, but episodes can happen at other times.

Can stress cause coronary artery spasm?

Stress may trigger an episode in some people, but it is not the only cause. Having symptoms during stress does not mean they are "just anxiety." New or changing chest pain still needs appropriate assessment.

Can I exercise if I have coronary artery spasm?

Many people can exercise when the condition is controlled, but advice should reflect your

symptoms and test results. Stop activity and seek help if you develop concerning chest pain, faintness, or unusual breathlessness.

Does coronary artery spasm ever go away?

Episodes may stop for long periods, but they can return. Some people remain on preventive medicine even when they feel well. Any plan to reduce or stop treatment should be medically supervised.

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