CONDITION

Angina

Learn how angina causes chest discomfort, when symptoms may be an emergency, and how coronary artery disease is diagnosed, treated, and monitored.

WHAT IT IS
Chest discomfort from insufficient oxygen-rich blood to the heart muscle

BODY SYSTEM
Heart and circulation

MAIN SYMPTOMS
Chest pressure or tightness, spreading discomfort, shortness of breath, sweating

WHAT CAUSES IT
Atherosclerosis, coronary artery spasm, small-vessel problems

HOW IT IS DIAGNOSED
Stress testing, coronary CT angiography, invasive coronary angiography

MAIN TREATMENT
Lifestyle changes, medicines, blood-flow procedures

CAN IT BE CURED?
No - treatment controls symptoms and risk

IS IT AN EMERGENCY?
Sometimes - new, severe, persistent, worsening, or resting chest discomfort

LONG-TERM OUTLOOK
Symptoms can be controlled, but coronary disease may progress

Overview

Angina is chest discomfort caused by the heart muscle not receiving enough oxygen-rich blood for its needs. It is usually a symptom of coronary artery disease, in which fatty deposits called plaque narrow or disrupt the arteries that supply the heart. Angina is not itself a heart attack, but some forms can signal a high risk of one.

People often describe angina as pressure, squeezing, tightness, heaviness, or burning rather than pain. Discomfort may also occur in the arms, shoulders, neck, jaw, back, or upper abdomen. Shortness of breath, sweating, nausea, or unusual tiredness can occur with or without obvious chest discomfort.

The main clinical patterns include:

Because chest discomfort has many possible causes, symptoms alone cannot confirm angina. New or changing symptoms need medical evaluation.

- Stable angina: Symptoms follow a pattern, often appearing during activity or emotional stress and improving with rest or prescribed medicine.
- Unstable angina: Symptoms are new, worsening, occurring with less activity, or happening at rest. This may be part of an acute coronary syndrome and needs emergency assessment.
- Vasospastic angina: A coronary artery temporarily tightens, reducing blood flow. Episodes often occur at rest.
- Microvascular angina: Small blood vessels within the heart do not work normally, even when the major coronary arteries are not severely narrowed.

Symptoms

Angina symptoms may begin gradually or suddenly. A person may notice pressure, tightness, fullness, squeezing, or burning in the center or left side of the chest. The discomfort can spread to one or both arms, the shoulders, neck, jaw, back, or upper abdomen.

Other possible symptoms include:

Stable angina often occurs when the heart is working harder, such as during exercise, walking uphill, cold weather, emotional stress, or a heavy meal. It usually improves when the activity stops or after use of prescribed fast-acting nitroglycerin.

Symptoms do not always follow a classic pattern. Women, older adults, and people with diabetes may be more likely to report breathlessness, nausea, back or jaw discomfort, or marked fatigue. However, anyone can have typical or less typical symptoms.

Call emergency services now for new, severe, persistent, or worsening chest pressure or discomfort, especially if it occurs at rest or is accompanied by shortness of breath, sweating, faintness, nausea, or discomfort in the arm, jaw, back, or shoulder. Do not drive yourself. If you have been prescribed nitroglycerin, follow your emergency plan, but do not delay calling for help when symptoms could represent a heart attack.

- Shortness of breath
- Sweating or clammy skin
- Nausea or vomiting
- Dizziness or lightheadedness

- Unusual weakness or fatigue
- A feeling similar to indigestion

Causes and risk factors

The most common cause of angina is atherosclerosis. In this process, cholesterol-containing plaque builds up inside coronary arteries. A narrowed artery may supply enough blood while the body is resting but not when the heart needs more oxygen during activity or stress.

A plaque can also tear or rupture. A blood clot may then form and suddenly reduce blood flow. This can cause unstable angina or a heart attack. Unlike a heart attack, unstable angina does not produce the same evidence of heart muscle death, but the distinction requires urgent testing.

Other causes include temporary coronary artery spasm and problems with the heart's smallest blood vessels. Less commonly, reduced oxygen delivery or increased strain on the heart may contribute. Examples include severe anemia, a very fast heart rhythm, uncontrolled high blood pressure, or certain heart valve conditions.

Factors associated with coronary artery disease include:

Risk reflects a combination of factors. Having one risk factor does not mean that a person has angina, and people without obvious risk factors can still develop coronary disease.

- Smoking or exposure to tobacco smoke
- High blood pressure
- High levels of LDL cholesterol
- Diabetes
- Chronic kidney disease
- Limited physical activity
- Excess body weight
- Older age
- A family history of early coronary artery disease

Diagnosis

A clinician will ask what the discomfort feels like, where it occurs, how long it lasts, what brings

it on, and what makes it better. They will also review medical history, medicines, tobacco use, and cardiovascular risk factors. A physical examination may identify other causes or signs of heart and circulation problems.

An electrocardiogram, or ECG, records the heart's electrical activity. It may show reduced blood flow, a previous heart attack, or a rhythm problem. A normal resting ECG does not rule out angina.

When symptoms might represent an acute coronary syndrome, clinicians usually perform repeated ECGs and blood tests for cardiac troponin. Troponin is a protein released when heart muscle is injured. These tests help distinguish a heart attack from unstable angina and noncardiac causes.

Further testing depends on symptoms, overall risk, and previous results. It may include:

If symptoms continue despite no major blockage being found, specialized testing may assess coronary artery spasm or small-vessel function. This can help identify vasospastic or microvascular angina.

- Echocardiography: Ultrasound that shows heart structure, pumping function, and valve movement.
- Coronary CT angiography: A scan using contrast material to look for plaque and narrowing in the coronary arteries.
- Stress testing: Exercise or medicine makes the heart work harder while an ECG or imaging test checks for reduced blood flow.
- Invasive coronary angiography: A thin tube is passed through an artery, and contrast dye outlines the coronary vessels. This is often used when risk is high or a procedure may be needed.

Treatment and management

Treatment aims to relieve symptoms, improve daily function, and reduce the risk of heart attack and other complications. The plan depends on the cause of angina, test results, other health conditions, and the person's preferences.

Lifestyle measures are an important part of care. These may include stopping smoking, following a heart-supportive eating pattern, being physically active within a clinician-approved plan, maintaining a healthy weight, sleeping well, and managing stress. Cardiac rehabilitation provides supervised exercise, education, and support for many people with coronary disease.

Medicines may be used for two broad purposes. Some reduce future cardiovascular risk.

Others prevent or relieve angina symptoms.

Risk-reducing treatment may include cholesterol-lowering medicine, usually a statin like atorvastatin or simvastatin , and treatment for high blood pressure or diabetes. Antiplatelet medicine can reduce clot formation in selected people with coronary disease, but it also increases bleeding risk and should be taken only as directed.

Medicines used to control symptoms include beta blockers like metoprolol or propranolol , calcium channel blockers like amlodipine or diltiazem , long-acting nitrates, and ranolazine. Fast-acting nitroglycerin may be prescribed for an angina episode or before an activity known to trigger symptoms. Nitrates can interact dangerously with medicines used for erectile dysfunction and certain pulmonary hypertension treatments, so clinicians and pharmacists need an accurate medicine list.

Some people need a procedure to improve blood flow. Percutaneous coronary intervention, often called angioplasty, uses a balloon and usually a stent to open an artery. Coronary artery bypass graft surgery creates new routes around narrowed arteries. The choice depends on the location and extent of disease, symptom burden, heart function, diabetes status, and expected benefits and risks.

Microvascular and vasospastic angina may require a different approach from angina caused by a fixed blockage. Treatment can focus on vessel function, spasm control, risk factors, and symptom relief. Finding the specific mechanism can guide care.

Complications

Angina can limit exercise, work, sleep, travel, and other daily activities. Worry about provoking symptoms may also affect emotional well-being. Persistent symptoms deserve reassessment rather than simply avoiding all activity.

Coronary artery disease may progress and lead to unstable angina or a heart attack. A heart attack occurs when prolonged loss of blood flow damages heart muscle. Other possible complications include abnormal heart rhythms, reduced pumping ability, and heart failure.

Sudden cardiac arrest is an uncommon but serious possible outcome of severe heart disease. Prompt emergency care for possible acute coronary symptoms offers the best chance of limiting heart damage.

Follow up

Routine follow-up helps assess symptom control, medicine effects, blood pressure,

cholesterol, diabetes management, and progress with lifestyle changes. Tell the clinician if symptoms interfere with usual activities, if you are using fast-acting nitroglycerin more often, or if medicine causes dizziness, headaches, bleeding, or other concerns. Do not stop heart medicines without discussing it with the prescriber.

Keep an up-to-date medicine list and know the action plan for chest symptoms. It can be useful to record when symptoms occur, what you were doing, how long they lasted, and what relieved them.

Arrange a prompt medical review if angina becomes more frequent, lasts longer, feels different, or begins with less effort than before. These changes are not part of routine follow-up.

Seek emergency help for chest discomfort that is new, severe, occurs at rest, does not settle as expected, or comes with fainting, marked breathlessness, sweating, nausea, or pain spreading to the arm, jaw, shoulder, or back.

Sources

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