



Medicine for Managers

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Angina

Angina is a chest pain which is the result of impaired blood flow to the heart. It is usually a symptom of coronary artery disease. The full name of the symptom is **angina pectoris**, a term which is derived from the Latin *angere* meaning “to strangle” and *pectus* meaning “the chest”, so that the actual translation is “a strangling feeling in the chest”. As with any unexplained chest pain, medical help should be sought straight away.

Angina was first identified in the sixth Century BC by Hindu surgeon and philosopher **Sushruta** who named the condition “hritshoola”.

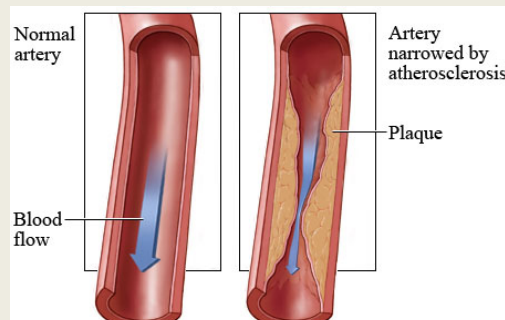
The first clinical description was written by the British physician, Dr William Heberden, in 1768.

Sufferers may use many words to describe the nature of the pain experienced, using descriptive terms such as tightness or heaviness in the chest, or pressure or a squeezing sensation. For some people it feels like a heavy weight pressing on the chest.

Angina may be difficult to distinguish from other types of chest pain, and, in fact, there are a number of different types of angina itself.

- **Stable Angina**. The most common form, usually induced by exercise and relieved by rest. It is often aggravated by walking uphill or in cold weather. Typically

- episodes last about five minutes when rest is taken.
- **Unstable angina** is not a consistent pain. It may occur at rest. It lasts longer than stable angina and may not be relieved by rest or anti-anginal medication. It often requires urgent treatment and may be dangerous.
- **Vasospastic (Prinzmetal) angina** does not occur because of coronary artery disease but because of spasm of the arteries causing pain, typically at rest and during the night.
- **Refractory angina** causes frequent attacks of pain despite the use of anti-anginal medication and lifestyle changes.



The Cause of Angina

The most common cause is coronary artery disease. The disease develops when the arteries in the heart become narrowed by the accumulation of plaques of a fatty substance called **atheroma**.

The result is that the arteries can transmit less blood and also are less able to alter their calibre in response to demand.

The plaques may be generalised throughout the artery or produce localised narrowing.

Anything which results in increased demand for oxygen and therefore increased blood flow will result in anginal symptoms because insufficient oxygen reaches the heart. Such circumstances include:

- Physical exercise
- Emotional stress
- Cold weather
- The consumption of a large meal

The mechanism of angina

As described above, arterial narrowing through obstruction or spasm results in insufficient blood reaching the heart muscle in circumstances when angina develops. In other words, the muscle is working harder but does not receive the oxygenated blood it requires. The lack of oxygen causes the build up of a chemical called **lactic acid**, which is produced by muscles breaking down sugars to create energy. Lactic acid is normally broken down to water and carbon dioxide, but with insufficient blood flow, the process is slowed and the build-up of lactic acid triggers nerve endings to signal pain.

Risk Factors for Angina

Although the incidence of angina and heart attack has fallen in the UK with reduction in smoking and more effective drug therapy, there remain a number of avoidable and unavoidable risks which predispose to angina.

- **Age** being 60 or over
- **Family History**. The risk increases if mother, father or siblings have had heart disease
- **Diabetes**, especially if poorly controlled, increases the risk of arterial disease and development of atherosclerosis
- **High blood pressure** damages the arteries

- **High cholesterol or triglycerides**. Low density lipoproteins ('bad cholesterol') can result in arterial narrowing with cardiac symptoms and heart attack
- **Smoking** and inhalation of secondhand smoke can damage arterial lining, allowing deposits of cholesterol to develop and lead to arterial blockage
- **Obesity** by making the heart work harder
- **Stress**, raising blood pressure and contributing to narrowing of arteries
- **Lack of exercise**
- **Medication** and **drug misuse** may result in unwanted effects on arteries, such as spasm, which can trigger angina.

Symptoms

Angina causes chest pain and discomfort. It may be described as squeezing, pressure or fullness and may spread to the arms, neck, jaw, shoulder or back. It may be accompanied by dizziness, nausea, breathlessness or sweating

Severity and duration of episodes may vary and need to be evaluated to distinguish the condition from heart attack or other causes of chest pain.

Diagnosis of angina

These days, there are a range of investigations for chest pain to establish whether the pain is cardiac and, if so, what the cause is.

Patients presenting with chest pain will initially be assessed clinically with a detailed history of the pain, precipitating causes, nature and possible resolution of the symptoms. Many causes of chest pain may be reasonably suspected to be angina following the history and clinical examination.

Investigation to confirm the diagnosis may be carried out by one or more of the following investigations including:

- **Electrocardiogram** The recording of the electrical activity of the heart may be carried out with the heart at rest and during exercise to identify any evidence of cardiac strain and insufficiency
- **Chest X-rays** are used to identify other pathology which may be causing pain in the chest, such as from the lungs or chest wall.
- **Computerised Tomography (CT) coronary angiogram** which is a technique using CT radiation to visualise the arteries outlined by the radioactive dye to enable the arterial state to be established.
- **Cardiac catheterisation** (also known as an angiogram) is a similar type of standard X-ray used with contrast dye which allows examination of the coronary arteries. The dye enables the radiologist to assess the arteries with the dye flowing.

Relief of symptoms and treatment

1. Medication to manage attacks

In most cases (stable angina) medication to take during an attack is provided:

- **Glyceryl trinitrate** as a spray or tablets used under the tongue and repeated as necessary. It may be used prior to exercise. GTN may cause flushing and headache.

2. Medication to prevent attacks

Treatment may involve one or more medicines including:

- **Beta blocker drugs** which slow the heart and allows it to beat with less force
- **Calcium channel blockers** which relax the arteries and increase the blood supply to the heart muscle
- **Isosorbide Mononitrate** is a long-acting drug of the nitrate group which, like GTN, relaxes blood vessels, increases the supply of

blood and oxygen and reduces the heart workload.

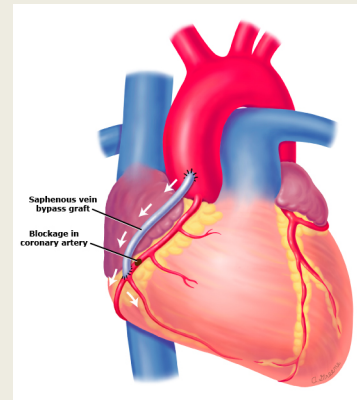
3. Medication to prevent heart attacks and strokes

Angina is a warning sign of higher risk of heart attack or stroke. Medicines such as those above are used together with:

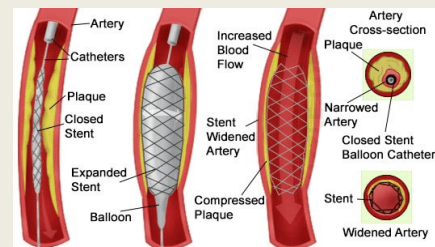
- **Low dose aspirin** or other agents with similar actions to prevent blood clots
- **Statins** to reduce blood cholesterol
- **ACE inhibitors** to lower blood pressure

4. Surgery may be recommended, particularly if medication is not fully effective. The two principal types of operation are:

- **Coronary Artery Bypass Graft (CABG)** where a blood vessel taken from elsewhere in the body is used to reroute blood round a blocked or narrowed coronary artery



- **Coronary angioplasty and stent.** In this procedure a narrowed section of artery is widened by the passage of a small tube called a stent



Both techniques are equally effective

Complications of angina

The principal complication of angina is an acute event involving a heart attack, when the narrowed arteries finally become blocked, resulting in acute *ischaemia* (lack of blood and oxygen) resulting in the death of part of the heart. If such an episode occurs the signs are:

- Severe chest pain, constricting and persisting for more than a short time
- Radiation to neck, arm, back or jaw
- Fainting
- Nausea and vomiting
- Breathlessness and sweating

Such patients need blue light transfer to hospital.

Many people live with angina. The development of chest pain or discomfort with exercise may cause anxiety, but with appropriate support and with the necessary medication, activity can be improved.

It is important to stay active, building it gradually and keeping a GTN spray or tablets available.

Whilst manual labour may present a problem for the angina sufferer, many people can continue to work normally. Many people are anxious about sex but, in fact, the risk of an angina attack during active sex is low, and again GTN should be kept near to use if necessary.

Drivers of cars do not need to notify the DVLA if they have angina (unless it occurs at rest) but there is a requirement for bus, coach or lorry drivers to do so.

Most people manage angina well, but if anxious or in need of support, speak to the GP or go to the British Heart Foundation Website for support.

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