Atrial fibrillation

Introduction

Atrial fibrillation is a heart condition that causes an irregular and often abnormally fast heart rate.

A normal heart rate should be between 60 and 100 beats a minute when you're resting, and is regular. You can measure your heart rate by feeling the pulse in your wrist or neck. In atrial fibrillation, the heart rate may be over 140 beats a minute, although it can be any speed.

The main difference between a normal rhythm and atrial fibrillation is that you are unable to predict when the next heart beat will come along, as heart rate is irregular.

This may lead to a number of problems, including dizziness and shortness of breath. You may also be aware of a fast and irregular heartbeat (palpitations) and feel very tired.

Some people with atrial fibrillation have no symptoms and are completely unaware that their heart rate is not regular.

When to see your DOCTOR

Make an appointment to see your DOCTOR if:

you notice a sudden change in your heartbeat

your heart rate is consistently lower than 60 or above 100 - especially if you are experiencing other symptoms of atrial fibrillation

See your DOCTOR as soon as possible if you have chest pain.

What happens in atrial fibrillation?

When the heart beats normally, its muscular walls contract (tighten and squeeze) to force blood out and around the body. They then relax, so the heart can fill with blood again. This process is repeated every time the heart beats.

In atrial fibrillation, the upper chambers of the heart, called the atria, contract randomly and sometimes so fast that the heart muscle cannot relax properly between contractions. This reduces the heart's efficiency and performance.

Why it happens

Atrial fibrillation occurs when abnormal electrical impulses suddenly start firing in the atria. These impulses override the heart's natural pacemaker, which can no longer control the rhythm of the heart. This causes you to have a highly irregular pulse rate.

The cause is not fully understood, but it tends to occur in certain groups of people (see below) and may be triggered by certain situations, such as drinking excessive amounts of alcohol or smoking.

Atrial fibrillation may be defined in various ways, depending on the degree to which it affects you:

Paroxysmal atrial fibrillation - this comes and goes and usually stops within 48 hours without any treatment.

Persistent atrial fibrillation - this lasts for longer than seven days (or less when it is treated).

Longstanding persistent atrial fibrillation - this means you have had continuous atrial fibrillation for a year or longer.

Permanent atrial fibrillation - atrial fibrillation is present all the time and no more attempts to restore normal heart rhythm will be made.

Who is affected?

Atrial fibrillation is the most common heart rhythm disturbance.

Atrial fibrillation can affect adults of any age. However, it affects more men than women and becomes more common the older you get. It affects about 10% of people over 75.

Atrial fibrillation is more likely to occur in people with other conditions, such as high blood pressure or atherosclerosis.

It's uncommon in younger people, but may be slightly more common in people with another heart condition, such as a heart valve problem.

Treating atrial fibrillation

Atrial fibrillation is generally not life threatening, but it can be uncomfortable and often needs treatment.

Treatment may involve:

medication to prevent a stroke

medication to control the heart rate or rhythm

cardioversion, where the heart is given a controlled electric shock to restore normal rhythm

cather ablation, to prevent atrial fibrillation from occurring

having a pacemaker fitted to help your heart beat regularly

Symptoms of atrial fibrillation

Some people with atrial fibrillation have no symptoms and it is only discovered during routine tests or investigations for another condition.

The most obvious symptom of atrial fibrillation is becoming aware of a fast and irregular heartbeat (palpitations), usually over 100 beats a minute. You can determine your heart rate by feeling the pulse in your wrist or neck.

You may also experience:

tiredness

breathlessness

dizziness

chest pain (angina)

The way the heart beats in atrial fibrillation reduces the heart's efficiency and performance. This can result in low blood pressure and heart failure.

If you notice a sudden change in your heartbeat and have chest pain, see your doctor immediately.

Causes of atrial fibrillation

The exact cause of atrial fibrillation is unknown, but it becomes more common with age and affects certain groups of people more than others.

Atrial fibrillation is common in people with other heart conditions, such as:

high blood pressure

atherosclerosis

heart valve disease

congenital heart disease (heart disease at birth)

cardiomyopathy (wasting of the heart muscle)

pericarditis (inflammation of the lining surrounding the heart)

It is also associated with other medical conditions:

hyperthyroidism (overactive thyroid gland)

pneumonia

asthma

chronic obstructive pulmonary disease

lung cancer

diabetes

pulmonary embolism (a blockage in a vessel in your lungs)

carbon monoxide poisoning

Not everyone with atrial fibrillation falls into one of the above groups. For example, it can affect extremely athletic people.

Some people with atrial fibrillation have no other conditions, and no cause can be found. This is known as lone atrial fibrillation.

Triggers

Certain situations can trigger an episode of atrial fibrillation, including:

drinking excessive amounts of alcohol, particularly binge drinking

being overweight

drinking lots of caffeine, such as tea, coffee or energy drinks

taking illegal drugs, particularly amphetamines or cocaine

smoking

Diagnosing atrial fibrillation

If you notice a sudden change in your heartbeat and you have chest pain, see your DOCTOR straight away.

Checking your pulse

Follow these four steps to check your pulse:

avoid taking any caffeine or other stimulants, then sit down for 5 minutes

hold your hand out, palm up, with your elbow slightly bent

place your index and middle fingers on your wrist, at the base of your thumb

count the beats for 30 seconds, then double that number to get your heart rate in beats per minute

A normal heart rate should be between 60 and 100 beats a minute when you are resting.

You can also download a leaflet from the Arrythmia Alliance on how to check your pulse (PDF, 113kb).

Feeling your pulse can give a strong indication of whether you have atrial fibrillation, but a full medical investigation is needed before a diagnosis can be made.

When to see your DOCTOR

Make an appointment to see your DOCTOR if:

you notice a sudden change in your heartbeat

your heart rate is consistently lower than 60 or above 100 - especially if you are experiencing other symptoms of atrial fibrillation

See your DOCTOR as soon as possible if you have chest pain.

If your DOCTOR suspects atrial fibrillation, you may be given an electrocardiogram and referred to a heart specialist, known as a cardiologist, for more tests.

A cardiologist who deals exclusively with electrical disturbances of the heart is called an electrophysiologist and this type of cardiologist can perform an operation (catheter ablation) to treat your atrial fibrillation.

Electrocardiogram

An electrocardiogram (ECG) is a test that records the rhythm and electrical activity of your heart.

Small stickers, called electrodes, are attached to your arms, legs and chest and connected by wires to an ECG machine.

Every time your heart beats, it produces tiny electrical signals. An ECG machine traces these signals on paper. During atrial fibrillation, your heart rate is irregular and may be over 140 beats a minute.

An ECG is usually carried out in a hospital. It takes about five minutes and is painless.

If you have the test during an attack of atrial fibrillation, the ECG will record your abnormal heart rate. This will confirm the diagnosis of atrial fibrillation and rule out other conditions.

However, it may be difficult to capture an attack, so you may be asked to wear a small, portable electrocardiogram recorder. This will either trace your heart rate continuously over 24 hours, or when you switch it on at the start of an attack.

Echocardiogram

An echocardiogram is an ultrasound scan of the heart. It can help identify any other heart problems and assess the structure and function of the heart and valves.

Chest X-ray

A chest X-ray will identify any lung problems that may have caused the atrial fibrillation.

Blood tests

Blood tests can also be useful in the diagnosis. They may show anaemia, which may be complicating the situation, problems with kidney function or hyperthyroidism (overactive thyroid gland).

Treating atrial fibrillation

Treatment of atrial fibrillation varies from person to person, depending on factors including:

the type of atrial fibrillation

symptoms

treatment of any underlying cause

age

overall health

Some people may be treated by their DOCTOR, whereas others may be referred to a heart specialist, known as a cardiologist.

The first step is to try to find the cause of the atrial fibrillation. If a cause is found, you may only need treatment for this.

For example, medication to correct hyperthyroidism (an overactive thyroid gland), if you have it, may cure atrial fibrillation.

If no underlying cause can be found, the treatment options are:

medicines to reduce the risk of a stroke

medicines to control atrial fibrillation

cardioversion (electric shock treatment)

catheter ablation

having a pacemaker fitted

Medicines to control atrial fibrillation

Medicines called anti-arrhythmics can control atrial fibrillation by:

restoring a normal heart rhythm

controlling the rate at which the heart beats

The choice of anti-arrhythmic medicine depends on the type of atrial fibrillation, other medical conditions you have, side effects of the medicine chosen and how well the atrial fibrillation responds.

Some people with atrial fibrillation may need more than one anti-arrhythmic medicine to control it.

Restoring a normal heart rhythm

A variety of drugs are available to restore normal heart rhythm. These include:

flecainide

beta-blockers, particularly sotalol

amiodarone

dronedarone (only for certain people)

If a particular medicine does not work or the side effects are troublesome, another may be tried.

Newer medicines are in development but are not widely available yet.

Controlling the rate of the heartbeat

The aim is to reduce the resting heart rate to under 90 beats a minute, although in some people the target is under 110 beats a minute.

A beta-blocker (such as bisoprolol or atenolol) or a calcium channel blocker (such as verapamil or diltiazem) will be prescribed.

A medicine called digoxin may be added to help further control the heart rate. In some cases, amiodarone may be tried.

Normally just one medication will be tried before catheter ablation is considered.

Side effects

As with any medicine, anti-arrhythmics can cause side effects. Read the patient information leaflet that comes with the medicine for more details.

The most common side effects of anti-arrhythmics are:

beta-blockers: tiredness, coldness of hands and feet, low blood pressure, nightmares and impotence

flecainide: nausea, vomiting and heart rhythm disorders

amiodarone: sensitivity to sunlight (high-protection sunscreen must be worn or skin covered up), lung problems, changes to liver function or thyroid function (regular

blood tests can check for this) and deposits in the eye (these go away when treatment is stopped)

verapamil: constipation, low blood pressure, ankle swelling and heart failure

Medicines to reduce the risk of a stroke

The way the heart beats in atrial fibrillation means there is a risk of blood clots forming in the heart chambers. If these enter the bloodstream, they can cause a stroke (see complications of atrial fibrillation for more information).

Your doctor will assess your risk to minimise your chance of a stroke. They will consider your age and whether you have a history of any of the following:

stroke or blood clots

heart valve problems

heart failure

high blood pressure

diabetes

heart disease

You may be given medication according to your risk. Depending on your level of risk, you may be prescribed warfarin or a newer type of anticoagulant, such as dabigatram, rivoroxaban or apixaban (see below).

Warfarin

People with atrial fibrillation who have a high or moderate risk of a stroke are usually prescribed warfarin, unless there is a reason they cannot take it.

Warfarin is an anticoagulant, which means it stops the blood from clotting. There is an increased risk of bleeding in people who take warfarin, but this small risk is usually outweighed by the benefits of preventing a stroke.

It's important to take warfarin as directed by the doctor. People on warfarin need to have regular blood tests and, following these, their dose may be changed.

Many medicines can interact with warfarin and cause serious problems, so check that any new medicines are safe to take with warfarin.

Whilst taking warfarin, do not drink more than three units of alcohol a day if you are a man or two units a day if you are a woman. It is also not safe to binge drink by saving up units to have on one day. Drinking cranberry juice can also affect your warfarin and is not recommended.

Aspirin

People with atrial fibrillation who have a low risk of a stroke are likely to be given a low dose of aspirin to take every day instead of warfarin.

People who are unable to take warfarin may also be given aspirin instead.

Newer anticoagulants

Rixaroxaban, dabigatran and apixaban are newer anticoagulants that may be used as an alternative to warfarin.

The National Institute for Health and Care Excellence (NICE) has approved these drugs for use in atrial fibrillation.

Compared to warfarin, rivaroxaban, dabigatran and apixaban do not have the same interactions with other medications, and don't require regular blood tests.

Cardioversion

Cardioversion may be tried in some people with atrial fibrillation. The heart is given a controlled electric shock to try to restore a normal rhythm.

The procedure normally takes place in hospital, where the heart is carefully monitored.

In people who have had atrial fibrillation for more than two days, cardioversion can increase the risk of a clot forming. If this is the case, warfarin is given for three to four weeks before cardioversion and for at least four weeks afterwards to minimise the chance of having a stroke. In an emergency, pictures of the heart can be taken to check for blood clots and a cardioversion can be performed without going on medication first.

If the cardioversion is successful, warfarin may be stopped. However, some people may need to continue with warfarin after cardioversion if there is a high chance of their atrial fibrillation returning and they have a higher risk of a stroke (see above).

Catheter ablation

Catheter ablation is a procedure that very carefully destroys the diseased area of your heart and interrupts abnormal electrical circuits. It's an option if medication has not been effective or tolerated.

Catheters (thin, soft wires) are guided through one of your veins into your heart, where they record electrical activity. When the source of the abnormality is found, an energy source (such as high-frequency radiowaves that generate heat) is transmitted through one of the catheters to destroy the tissue.

This procedure commonly takes two to three hours, so it may be done under general anaesthetic, where you are put to sleep.

Having a pacemaker fitted

A pacemaker is a small, battery-operated device that is implanted in your chest, just below your collarbone. It is usually used to prevent your heart rate going too slowly, but in atrial fibrillation it may help your heart beat regularly.

Having a pacemaker fitted is usually a minor surgical procedure performed under a local anaesthetic (where the area is numbed).

This treatment may be used when medicines are not effective or are unsuitable. This tends to be in people aged 80 or older.

Complications of atrial fibrillation

The main complication of atrial fibrillation is an increased risk of having a stroke. In extreme cases, it can lead to heart failure.

Stroke

When the upper chambers of the heart, called the atria, do not pump efficiently, as in atrial fibrillation, there is a risk of blood clots forming.

These blood clots may move into the lower chambers of the heart, called the ventricles, and get pumped into the blood supply to the lungs or the general blood circulation.

Clots in the general circulation can block arteries in the brain, causing a stroke.

Atrial fibrillation increases the risk of a stroke by around four to five times. However, the risk depends on a number of factors, including age and whether you

have high blood pressure, heart failure, diabetes and a previous history of blood clots.

Heart failure

If your atrial fibrillation is persistent, it may start to weaken your heart. In extreme cases, it can lead to heart failure, where your heart cannot pump blood around your body efficiently.