Ajmaline test

This factsheet contains information about having an ajmaline test. This is a clinical procedure performed in order to diagnose Brugada syndrome, which is an uncommon but serious heart condition. This factsheet is not meant to replace discussion with your healthcare professionals, but we hope it will help to answer some of the questions that you may have.

In order to better understand the ajmaline test it is helpful to know a bit about how the heart’s electrical system works, so this is explained below. If there is anything that you do not understand, a member of the cardiac rhythm management team will be happy to explain further.

The normal electrical system of the heart
The heart has its own electrical conduction system, which sends signals throughout the upper chambers (atria) and lower chambers (ventricles) of the heart to make it beat in a regular, coordinated rhythm. The conduction system consists of two nodes that contain conduction cells and special pathways that transmit the impulse. A normal heartbeat begins when an electrical impulse is fired from the sinus node (also called sino-atrial or SA node), in the right atrium. The sinus node is responsible for setting the rate and rhythm of the heart and is therefore referred to as the heart’s pacemaker. The electrical impulse fired from the SA node spreads throughout the atria, causing them to contract and squeeze blood into the ventricles.

The electrical impulse then reaches the atrioventricular node (AV node), which acts as a gateway, slowing and regulating the impulses travelling between the atria and the ventricles. As the impulse travels down the pathways into the ventricles the heart contracts and pumps blood around the body. The cycle then begins again. A normal adult heart beats in a regular pattern 60 to 100 times a minute. This is called sinus rhythm.

Diagram of the heart
Arrhythmia
An arrhythmia is a change to the heart's normal (sinus) rhythm which occurs when:
• the heart's conduction pathway is damaged or becomes blocked
• an extra pathway exists or
• there is a chemical imbalance within cells of the heart (ion channels)

The heart may beat too quickly (tachycardia), too slowly (bradycardia) or irregularly. This may affect the heart's ability to pump blood around the body. Arrhythmias can occur in the upper chambers of the heart (the atria) or in the lower chambers (the ventricles).

What is Brugada syndrome?
Brugada syndrome is an inherited condition, whereby there is an underlying fault with the electrical activity of the heart. The heart is usually structurally normal. To understand the underlying cause, it's important to know how the heart cells work. The heart cells have channels that allow ions (potassium, calcium and sodium) to enter and leave, this movement generates the heart's electrical activity. Each time your heart beats, it produces tiny electrical signals (an ECG machine is used to record this activity). In people with Brugada syndrome, the ion channel affected is the sodium channel.

Some patients with Brugada syndrome may be at risk of developing fast heart rhythms which may result in blackouts or, very rarely, sudden death. If the ventricles start beating at an abnormally fast rate it results in the heart not working as efficiently, which can cause symptoms of weakness, dizziness, chest pain, shortness of breath or even collapse.

However, it is important that you remember that the majority of patients who have Brugada syndrome do not experience arrhythmias and feel perfectly well.

Why do I need an ajmaline test?
Your doctor has advised you to undergo an ajmaline test to exclude Brugada syndrome. It is a well-established clinical test which uses a drug called ajmaline (a sodium channel blocker), in order to identify the characteristic ECG pattern changes associated with Brugada syndrome. In patients with normal cardiac cells, ajmaline has little or no effect on the ECG.

What happens during the test?
The ajmaline test is undertaken in a clinical setting with cardiac monitoring. You will be attached to a cardiac monitor and ECG machine. Your doctor will administer the ajmaline through a vein in your arm and record your ECG every three minutes. The ECG will record how your heart responds to ajmaline, allowing your doctor to collect very detailed information. The effect of ajmaline is very short-acting and you should therefore be able to go home a couple of hours after the test has been completed.

Is the ajmaline test safe?
The ajmaline test is safe. However, as with any procedure, there are potential risks. These are outlined on the next page and will be fully explained by your doctor before you have your procedure. The ajmaline test is performed safely in both children and adults.
**Risks of the procedure**
Complications associated with this procedure are very rare. However, it's important that you are aware that there are some risks associated with the ajmaline test that may, on rare occasions, occur either during or after the procedure. These risks can be treated and are rarely life-threatening. These are explained below.

**At the time of the procedure**
It is common to experience a metallic taste in your mouth during the administration of the ajmaline and you may experience some visual disturbance such as double vision. Such side effects usually resolve quickly once the infusion has finished. Very rarely, ajmaline may cause your heart to go into a very fast ventricular rhythm. If this happens we would need to correct it quickly by performing a cardioversion. This is a treatment for fast heart rhythms where a defibrillator is used to apply an electrical charge directly to the heart muscle to restore it back to normal (sinus) rhythm. Ajmaline may also cause very slow heart rhythms. This would need to be treated with medication to regulate your heart's rhythm.

**After the procedure**
There is a very low risk that you may experience an arrhythmia after we have stopped administering the ajmaline. We will therefore keep you in hospital until your ECG has returned to normal.

**What happens on the day of the procedure?**

**Before admission**
You do not need to stop taking any of your normal medication before your ajmaline test.

**Before the procedure**
You will have been sent an appointment letter confirming the date, time and location of your ajmaline test. When you arrive on the ward you will be introduced to the nurse who will be looking after you. The nurse will talk to you and your family and answer any questions you may have. Before the procedure, a small needle (cannula) will be inserted into a vein in your hand. You will have blood taken and an ECG recorded. Your doctor will explain the test to you and will ask you to sign a consent form. This is to ensure you understand the test and its associated risks. If you have any worries or questions, please do not be afraid to ask. It is important to tell your nurse or doctor if you have any allergies or have had a previous reaction to drugs or other tests.

**During the procedure**
It is unlikely that you will experience any adverse effects during the ajmaline test. You will be awake and able to talk to us. It's normal to feel anxious but your doctor and nurse will be present throughout and will be happy to discuss any questions or concerns you may have. There will be equipment by your bedside used to monitor your heart rhythm and record your blood pressure and you will be attached to an ECG machine. Your doctor will then begin the test by slowly administering the ajmaline. This may sting a little and you may feel some mild discomfort. Your ECGs will be recorded at three-minute intervals for the duration of the test.

You should not feel anything, however sometimes patients do complain of a metallic taste in the mouth, hot flushes, numbness around the lips and blurred vision. These side effects usually resolve quickly once the test is completed. If you do have any symptoms during the test, for example chest pain, dizziness or shortness of breath, please tell your nurse or doctor. During the test we look very closely at your ECG to observe for potential changes, it does not mean there is anything wrong, so don’t be alarmed.
After the procedure
After the test has been completed, we will continue to monitor you for approximately two hours. The nurse will check your blood pressure, pulse and the ECG. If you feel any palpitations (extra heartbeats) or dizziness, please let the nurses know. Following the test you will be able to eat and drink, and the small needle in your vein will be removed. Once the doctor has reviewed the ECGs from your test you will be able to go home.

When will I know the result?
After your test your doctor will show your ECGs to a consultant and discuss the findings of the test and your ongoing treatment plan with you and your family before you leave.

What treatment options are available for me?
Your ongoing treatment and management plan will depend on the results of your ajmaline test and your medical and family history. This may involve additional investigations and/or referral to the genetic screening service.

There are no drugs currently available that can treat Brugada syndrome. The implantable cardioverter defibrillator (ICD) is the treatment currently recommended to protect you from arrhythmias. An ICD will not prevent the arrhythmia but can treat it. Your consultant will discuss the risks and benefits with you on an individual basis.

Genetic screening for Brugada syndrome
Your consultant may discuss genetic screening with you and refer you to a specialist. Genetic screening is used to find out whether someone is carrying a specific genetic mutation (altered gene) that causes a particular medical condition, such as Brugada syndrome.

It is very important that if you have a close family member diagnosed with Brugada syndrome, or have a family member who has died suddenly from an unexplained cause, that you inform your doctor or cardiac nurse specialist. If you have any questions about this, please do not hesitate to contact us.

Going home
You will normally be able to go home the same day. It is important to ask a family member or friend to collect you and drive you home.

Resuming normal activities
You can resume your normal daily activities (such as walking, bathing and showering) and return to work once you have been discharged from hospital.

Follow-up care
You will receive specific follow-up instructions from the cardiac rhythm management team, and we will write a detailed letter to your GP describing your hospital stay and treatment.

Cancellations
Unfortunately we do sometimes have to cancel procedures. If this happens to you, we will always try to explain the reason. We fully appreciate that this is a stressful time for you and your family and we will do our best to provide you with a new date that is convenient for you as soon as possible.
If you have any further questions
We cannot guarantee that a particular person will perform the procedure. The person will, however, have appropriate experience.

If you have any questions regarding your procedure please call 023 8120 8436 to speak to a cardiac rhythm management clinical nurse specialist.

If you have a query relating your admission date please contact the cardiac rhythm management coordinator on: 023 8120 8772. You can also email: crmnurses@uhs.nhs.uk

Useful links

Arrhythmia Alliance  
www.heartrhythmcharity.org.uk

British Heart Foundation  
www.bhf.org.uk

NHS Choices  
www.nhs.uk/Conditions/brugada-syndrome/Pages/Introduction.aspx#cause

If you need a translation of this document, an interpreter or a version in large print, Braille or on audiotape, please telephone 023 8120 4688 for help.