BRADYCARDIA
(SLOW HEART RHYTHM)

The Heart Rhythm Charity

Promoting better understanding, diagnosis, treatment and quality of life for individuals with cardiac arrhythmias

Arrhythmia Alliance

www.heartrhythmcharity.org.uk

Registered Charity No. 1107496 ©2007
Arrhythmia Alliance (A-A) is a coalition of charities, patient groups, patient, carers, medical groups and allied professionals.

These groups remain independent however, work together under the A-A umbrella to promote timely and effective diagnosis and treatment of arrhythmias.

A-A supports and promotes the aims and objectives of the individual groups.

Contents

Introduction

Glossary of technical terms used

The normal electrical system of the heart

Diagram of the heart’s electrical system

What is an arrhythmia?

Bradycardia

Signs and symptoms of bradycardia

Sick Sinus Syndrome

Syncope

Heart block

First–degree heart block

Type I second–degree heart block

Type II second–degree heart block

Third–degree heart block (complete heart block)

Treatment options for bradycardia

Further information

Useful Websites

Arrhythmia Alliance patient booklets are reviewed annually. This booklet will be next updated August 2008. If you have any comments or suggestions please contact A-A.
**Introduction**

This booklet is intended for use by people who wish to understand more about bradycardia. The information within this booklet comes from research and previous patients' experiences.

Additional information can be sourced from the website www.heartrhythmcharity.org.uk

**Glossary of technical terms used**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrhythmia</td>
<td>Irregular heart rhythm</td>
</tr>
<tr>
<td>Atria</td>
<td>Top chambers of the heart</td>
</tr>
<tr>
<td>Asystole</td>
<td>Cessation of heart beat</td>
</tr>
<tr>
<td>Bradycardia</td>
<td>Slow heart rhythm</td>
</tr>
<tr>
<td>Event Monitor</td>
<td>Monitor to record heart beats</td>
</tr>
<tr>
<td>Heart Block</td>
<td>Electrical impulses are slowed or blocked as they travel from the top to the bottom chambers of the heart</td>
</tr>
<tr>
<td>Insertable Loop Recorder</td>
<td>Monitor implanted for a period of time to record your heart rhythm</td>
</tr>
<tr>
<td>Syncope</td>
<td>Loss of consciousness due to bradycardia or asystole</td>
</tr>
<tr>
<td>Ventricles</td>
<td>Bottom chambers of the heart</td>
</tr>
</tbody>
</table>
The normal electrical system of the heart

The heart has its own electrical conduction system. This conduction system sends electrical signals (impulses) throughout the upper (atria) and lower (ventricles) chambers of the heart to make it beat in a regular, coordinated rhythm. The conduction system is made up of two nodes that contain conduction cells and special pathways that transmit the impulse.

Diagram of the heart’s electrical system

The normal heartbeat begins when an electrical impulse is created and sent 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 they contract and pump blood to the lungs and around the body. The cycle then begins all over again.

The normal adult heart beats in a regular pattern 60-100 times a minute; this is called sinus rhythm.

What is an arrhythmia?

Sometimes, if the conduction pathway is damaged or becomes blocked, or if an extra pathway exists, the heart’s rhythm changes. The heart may beat too quickly (tachycardia), too slowly (bradycardia) or irregularly which may affect the heart’s ability to pump blood around the body. These abnormal heartbeats are known as arrhythmias. Arrhythmias can occur in the upper chambers of the heart, the atria, or in the lower chambers of the heart, the ventricles.

Bradycardia

Bradycardia is a term that describes a number of different conditions in which the heart beats at an unusually slow rate. Sinus bradycardia is an unusually slow heartbeat due to normal causes and commonly occurs in athletes or during a state of deep relaxation. This is perfectly normal and should not usually cause any difficulties. Sinus bradycardia can also occur in patients with heart disease or in response to different medications. The severity of and treatment required for the bradycardia depends on the area of the heart affected. If impulses are sent from the sinoatrial node at a slow rate, or if the impulses are delayed as they travel through the conduction system, the heartbeat will be slow. Bradycardia may also be caused by age–related generation of the heart’s electrical conduction system, coronary heart disease or by medications prescribed to treat arrhythmias or high blood pressure. Once these medications have been reduced or discontinued, the bradycardia will usually resolve on its own.
Signs and symptoms of bradycardia

Some types of bradycardia produce no symptoms, and others may cause dizziness, breathlessness on exertion or fainting (syncope).

Sick Sinus Syndrome

Sick Sinus Syndrome occurs when the heart’s natural pacemaker, the SA node fails, causing an irregular heartbeat. Patients with sick sinus syndrome may experience a slow heartbeat (bradycardia), a fast heartbeat (tachycardia) or heartbeats that swap between fast and slow (brady–tachy syndrome or tachy–brady syndrome). Patients may experience dizziness, tiredness, weakness or fainting (syncope). Although it is more common in elderly people it can occur in children, often after cardiac surgery.

Syncope

In Syncope there are many causes of syncope, some common and some rare. Most cases of syncope are due to the ‘common’ faint. However other important causes include defects of the ‘wiring’ of the heart. Syncope can occur when the heart slows or momentarily stops (asystole). Therefore oxygenated blood is not pumped to the brain, causing light-headedness, dizziness, fading of vision, buzzing in the ears before loss of consciousness. Often patients will recognise these symptoms and be able to sit or lie down before losing consciousness. However, for many there are no symptoms, just an abrupt loss of consciousness. People of all ages experience syncope, including children (reflex anoxic seizures/reflex asystolic syncope due to unexpected stimuli such as a bump or fright). Syncope involving bradycardia can easily be diagnosed by taking a detailed history and using an event monitor if occurrence is regular and frequent, or an insertable loop recorder if irregular and less frequent.

There is a separate leaflet available explaining the various types of syncope. If you require an insertable loop recorder your doctor, nurse or physiologist will discuss this with you and provide you with a separate leaflet explaining in more detail.
Heart block

(Atrioventricular block or AV block) occurs when electrical impulses are slowed or blocked as they travel from the top chamber of the heart (atria) through the atrioventricular node (AV node) into the bottom chambers (ventricles). The symptoms and treatments for heart block depend on its severity. The different types of heart block and the treatment options available are explained overleaf.

First–degree heart block

First–degree heart block occurs when the electrical impulses slow as they pass through the AV node. However all impulses reach the ventricles. First–degree heart block rarely causes any symptoms and is often found in athletes. No other treatments are generally necessary. Patients with known first degree heart block should not be prescribed beta-blockers unless very carefully supervised.

Type I second–degree heart block

Occurs when the electrical impulses are delayed to a greater extent with each heartbeat until a beat is skipped entirely and the cycle then repeats. This may rarely cause dizziness and other symptoms. In such cases, a pacemaker may be required.

Type II second–degree heart block

Occurs when some of the electrical impulses from the SA node are unable to reach the ventricles, for example every third or fourth impulse. This is usually because of an underlying disease. Usually a pacemaker may be required to control and regulate the heart rhythm.
Third–degree heart block (complete heart blocks)

Third degree heart block (complete heart block) occurs when no electrical impulses reach the ventricles, this is usually as a result of underlying disease or medications. In the absence of any electrical impulses from the atria, the ventricles produce impulses on their own; these are called ventricular escape beats. However, these heartbeats are usually slow and the patient may feel very unwell. This type of heart block can sometimes occur for a short time in certain types of heart attack and may require a temporary pacemaker. Sometimes the patient remains relatively well and a pacemaker can be implanted after a few days. On other occasions this condition needs to be treated more quickly and if a pacemaker cannot be implanted immediately, the doctors will put a temporary pacemaker wire into the heart to keep the heart pumping regularly until the permanent system is implanted.

Treatment options for bradycardia

Commonly, symptomatic bradycardia is treated by discontinuing any medication that slows the heartbeat, and treating any underlying conditions and/or by implanting a permanent pacemaker. Pacemakers are implanted under the skin and the wires are permanently attached to the heart. When a slowed or abnormal heart rhythm is detected, the pacemaker fires a very small electrical impulse to regulate the heartbeat. If you require a permanent pacemaker your doctor, and nurse and/or physiologist will discuss this with you and provide you with a leaflet explaining this in more detail. For further information contact Arrhythmia Alliance for our Pacemaker Patient Information Leaflet.
Useful websites

A list of useful sites can be found at: www.heartrhythmcharity.org.uk. This list is not exhaustive and it is constantly evolving. If we have excluded anyone, please accept our sincerest apologies and be assured that as soon as the matter is brought to the attention of the Arrhythmia Alliance, we will quickly act to ensure maximum inclusiveness in our endeavours.

If you wish to contact us direct please phone on 01789 450 787 or email heartrhythm@stars.org.uk

Finally

This is the list of Arrhythmia Alliance Patient booklets available by website or emailing.

- Atrial Fibrillation Inc Atrial Flutter
- Bradycardia (slow heart rhythm)
- Cardiac Resynchronisation Therapy ICD/CRT Patient Information
- Catheter Ablation
- Catheter Ablation for Atrial Fibrillation
- Drug treatment for heart rhythm disorders (arrhythmias)
- Electrophysiology Studies
- Exercising with an ICD
- FAQ’s
- Heart Rhythm Charity
- Highlighting the work of the Alliance
- ICD Patient Information
Please feel free to discuss any concerns at all with the doctors, physiologists or your specialist nurse at any time.
Please help us to improve services for all those affected by arrhythmias and to save lives by making a donation today. Please complete the donation form below and return to P.O Box 3697 Stratford upon Avon CV37 8YL or click on [www.heartrhythmcharity.org.uk](http://www.heartrhythmcharity.org.uk) and click the donate icon.

### Membership is free to individuals however if you would like to make a DONATION please complete and return.

<table>
<thead>
<tr>
<th>I would like to make a donation to A-A and enclose:</th>
<th>£</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have made donation to A-A via PAYPAL at <a href="http://www.arrhythmiaalliance.org.uk">www.arrhythmiaalliance.org.uk</a> to the sum of:</td>
<td>£</td>
</tr>
<tr>
<td>I have arranged a standing order from my Bank/Building Society Account to A-A. (min amount £10p.a.)</td>
<td>£</td>
</tr>
<tr>
<td>Please tick here if you agree to Gift Aid your subscription/donation</td>
<td>Tick here</td>
</tr>
</tbody>
</table>

### Gift Aid

| Name of taxpayer: | ................................................................. |
| Address: | ........................................................................ Postcode: ........................ |

Please allow Arrhythmia Alliance to claim an extra 28p for every £1 you donate at no cost to you. I want Arrhythmia Alliance to treat all donations I have made since 6 April 2000, and all donations I make from the date of this declaration until I notify you otherwise, as Gift Aid donations. I currently pay an amount of income tax and/or capital gains tax at least equal to the tax that Arrhythmia Alliance reclaims on my donations in the tax year. I may cancel this declaration at any time by notifying A-A. I will notify A-A if I change my address. Please note full details of Gift Aid tax relief are available from your local tax office in leaflet IR 65. If you pay tax at a higher rate you can claim further tax relief in your Self-Assessment tax return.

### Standing Order Authority

My Bank: 
Bank Address: 
Please Pay: A-A, Account: 02685818 Sort Code: 30-98-26, Lloyds TSB Plc, 22 Bridge St, Stratford upon Avon, CV37 6AG

| The Sum of £/E/$: | On (1st Date): | / | / 200.... |
| And after this, every: Month / Year (delete) | Account No.: | Signature: |
| Sort Code: | |
| Date: | |

Please hand this form in to your Bank

### Credit Card Payment

| Card Type: | Expiry Date: |
| Card Number: | Amount of £/E/$: |
| Name on Card: | Address: |
Please remember these are general guidelines and individuals should always discuss their condition with their own doctor.