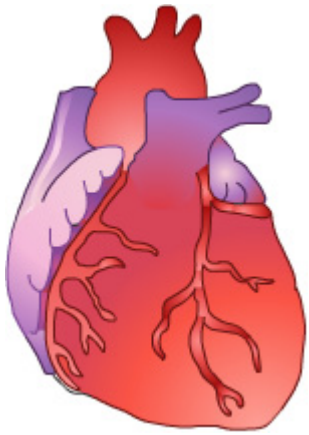
X-Plain
Atrial Fibrillation
Reference Summary

Introduction

Atrial fibrillation is a common heart condition that affects approximately 2.5 million Americans every year.



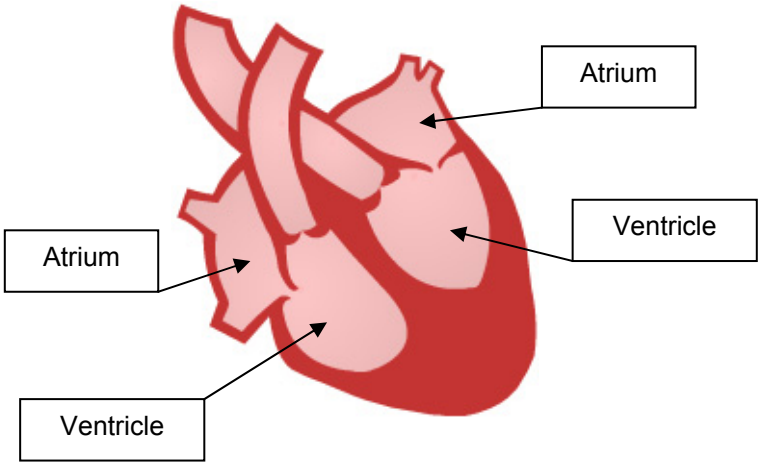
Atrial fibrillation requires immediate medical attention. If not treated it can lead to life-threatening strokes.

The treatment of atrial fibrillation may require long-term medication and possibly electroshock to the heart.

This reference summary will discuss the symptoms and treatment options for atrial fibrillation.

Anatomy

The heart is the most important muscle in the body. It is formed by 2 sides, the right side and the left side. Each side has 2 chambers, an atrium and a large ventricle.



Blood comes from the body to the right atrium. From there it is pumped to the right ventricle. The right ventricle pumps the blood to the lungs. In the lungs, oxygen is delivered to the blood. From the lungs blood goes to the left atrium and then to the left ventricle. From there it is pumped to the rest of the body.

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Heart contractions are synchronized. A normal heart rate varies between 60 and 100 beats per minute while a person is at rest. The muscles of the heart contract and pump blood because they are stimulated by a small electric current.

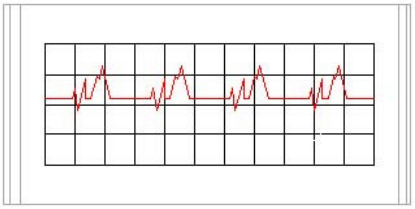
The electric current in the heart starts in an area of the atria known as the sinus node. It causes the atria to contract and pump blood to the ventricles.

From the sinus node, the electric current travels through fibers similar to electric cables, to another area of the ventricles known as the atrio-ventricular node or AV node.

From the AV node the electric current goes to the ventricles and causes them to contract and pump blood.

Atrial Fibrillation

Atrial fibrillation occurs when the electric current in the heart is generated from all over the atria at a very high speed, between 300 and 500 impulses a minute. This does not allow the atria to contract in a synchronized fashion.



Because of the high number of impulses generated by the heart, and their location, the atria begin to quiver. This is known in medical terms as fibrillation. When this happens the ventricles contract independently from the atria. This causes a fast, irregular heart rate between 80 and 160 beats per minute.

Such a rapid and irregular heart rate causes some blood to remain in the heart after every contraction. This results in blood pooling in the heart chambers, which increases the risk of blood clot formation.

These blood clots can get dislodged and travel to the brain and lungs where they could block the flow of blood. When the flow of blood is interrupted a fatal or disabling stroke could occur.

Causes

Coronary artery disease and heart failure are the two main causes of atrial fibrillation.

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Rheumatic heart disease, which affects the valves of the heart, also increases the chance of atrial fibrillation.

Hypertension and diabetes can also play a role in damaging the atria of the heart and can cause atrial fibrillation.

An over-active thyroid gland, chronic lung diseases such as COPD and inflammation of the lining of the heart can also cause the atria to fibrillate.

Rarely atrial fibrillation occurs in otherwise healthy people without an underlying disease.

Symptoms

Atrial fibrillation may not have any symptoms. Most patients do feel chest palpitations and possibly skipped heartbeats.

If the heart rate becomes very high or if the heart becomes unable to pump blood adequately, patients may feel chest pain known as angina. They may also feel light-headedness and may even faint.

Diagnosis

Atrial fibrillation is diagnosed by an electro-cardiogram, also known as an EKG. This test takes only a few minutes. During this test, electrodes are placed on the chest and body to record the heart's electrical impulses. Because atrial fibrillation comes and goes, and may not happen during an EKG, you may be asked to wear a portable EKG. This portable EKG test, known as a Holter monitor, lasts for 24 hours.

Your physician will also want to determine what is causing atrial fibrillation. He or she will check your heart, blood pressure, blood sugar, and levels of thyroid hormone.

Treatment

Some cases of atrial fibrillation may improve on their own. If this happens, your physician will still perform tests to make sure you do not have any of the diseases that can cause atrial fibrillation. If it persists, your physician can treat it in one of several ways.

The underlying cause of atrial fibrillation will have to be treated. This sometimes causes the heart rate to become normal again. For example, if atrial fibrillation is

caused by an over-active thyroid gland, the thyroid gland may be removed surgically or through radioactive iodine. If a heart valve disease causes atrial fibrillation, a valve replacement surgery may be necessary.

Controlling high blood pressure and your blood sugar level, as well as preventing any further heart problems, may also help in some cases.

If atrial fibrillation does not improve, other procedures may be tried. Your physician may attempt to revert your heart rate to normal. This is known as cardioversion.

If cardioversion is not recommended or is not successful, blood thinners are given to prevent blood clots from forming in the heart.

Cardioversion

Cardioversion, or reverting the heart rate to normal, can be done with various medications or using an electric shock to the chest area.

Depending on the patient's condition, another procedure called catheter radiofrequency ablation may be attempted. During this procedure, parts of the electrical pathways of the heart are destroyed using a small electric current. This current is delivered to the heart using a catheter that is threaded through the blood vessels into the heart. After this procedure a pacemaker may need to be placed because the heart loses its ability to generate and regulate the heart beat.

Patients may also be placed on long-term medications to prevent the atrial fibrillation from recurring.

Anticoagulation or Blood Thinning

If cardioversion is not successful, the risk of blood clots forming inside the heart becomes very high. Blood thinners are then administered to help decrease the chance of blood clots forming. The most common blood thinner used is warfarin (Coumadin®). Warfarin is a very helpful medication that has potentially significant side effects. Your physician will need to check your blood regularly to prescribe the correct dosage. Regular follow up visits with your physician are essential in preventing complications due to atrial fibrillation or warfarin.

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Prevention

The best way to prevent atrial fibrillation from occurring is to take steps towards keeping your heart healthy.

These steps include:

1. Not smoking
2. Eating a low-fat diet
3. Controlling your blood pressure and blood sugar levels
4. Exercising regularly under your physician's supervision

Unfortunately, atrial fibrillation may not be totally preventable, and long-term treatment of this condition may be needed.

Summary

Atrial fibrillation is an abnormal, irregular heart rhythm. It typically causes a rapid heartbeat. Atrial fibrillation is a serious disease because it can cause blood clots that can travel from the heart to the brain, resulting in a stroke. Thanks to advances in medicine, several treatment options are available. Most patients can still live a very healthy and productive life after treatment. It is important to follow-up with a physician regularly.

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