



Atrial Flutter

Melissa Boyer, PA; Bruce A. Koplan, MD, MPH



The heart is made up of 4 chambers (Figure 1). Blood enters the heart from the body into the right atrium and then travels into the right ventricle, which pumps blood to the lungs where it collects oxygen. Blood then returns back to the heart from the lungs into the left atrium, which then empties into the left ventricle. The left ventricle then pumps blood out to the body. The heart contains an electrical system that coordinates the beating of the 4 chambers. The normal electrical activity of the heart begins in a small area of the right atrium called the sinus node (Figure 1); therefore, a normal heart rhythm is referred to as “sinus rhythm.” Electrical activity begins in the sinus node and then spreads to both atria, telling these chambers to contract. The electrical activity then spreads to the ventricles, directing these chambers to contract and to pump blood out to the body.

An arrhythmia is any abnormality of the normal heart rhythm. The term arrhythmia can refer to a heart rhythm that is either too fast (referred to as tachycardia) or too slow (bradycardia) or to a heart rhythm that starts in some place other than the normal location for the electrical activity to begin.

What Is Atrial Flutter, and How Is It Diagnosed?

Atrial flutter is a common tachycardia (fast heart beat) that results from a rapid electrical circuit in the atrium (Figure 2). Atrial flutter can be caused by scarring in the heart resulting from prior cardiac disease or heart surgery, but it can also occur in some patients with no other identifiable heart problems. During atrial flutter, instead of the electrical activity starting in the sinus node, electrical activity begins in a large circuit that causes the atria to beat very rapidly. The rapid beating of the atria can in turn cause the ventricles to beat rapidly. Atrial flutter typically originates from the right atrium and most often involves a large circuit that travels around the area of the tricuspid valve that is between the right atrium and the right ventricle. This type of atrial flutter is referred to as typical atrial flutter. Less commonly, atrial flutter can result from circuits in other areas of the right or left atrium that cause the heart to beat fast. Atrial flutter that results from these less common types of circuits is referred to as atypical atrial flutter.

Atrial flutter is diagnosed by an ECG. It is important to determine

when the symptoms started, how often they occur, and how long each episode lasts. If symptoms are intermittent (also referred to as paroxysmal), a Holter monitor (a small pager-sized device that attaches to small electrode stickers on the outside of the chest) may be worn by the patient from anywhere between 24 hours and 30 days. Because the Holter monitor records every heart beat over a 24-hour period, it can be used to diagnose atrial flutter and to determine how often it is occurring.

Who Gets Atrial Flutter?

Atrial flutter is more likely to occur in people who have some form of heart disease or medical condition such as congestive heart failure, rheumatic valve disease, congenital heart disease, lung disease such as emphysema, or high blood pressure. It can also occur in people with no prior heart problems. In addition, prior cardiac surgery may increase the risk of atrial flutter because of scarring of the atrium. The risk of atrial flutter increases with age. When atrial flutter occurs in people with a normal healthy heart, it is called lone atrial flutter.

Atrial flutter also can occur in people who have other atrial arrhythmias

The information contained in this *Circulation* Cardiology Patient Page is not a substitute for medical advice or treatment, and the American Heart Association recommends consultation with your doctor or healthcare professional.

From the Cardiovascular Division, Brigham and Women's Hospital, Boston, Mass.

Correspondence to Dr Bruce A. Koplan, Brigham and Women's Hospital, Cardiovascular Division, 75 Francis St, Boston, MA 02115. E-mail bkoplan@partners.org

(*Circulation*. 2005;112:e334-e336.)

© 2005 American Heart Association, Inc.

Circulation is available at <http://www.circulationaha.org>

DOI: 10.1161/CIRCULATIONAHA.105.540476

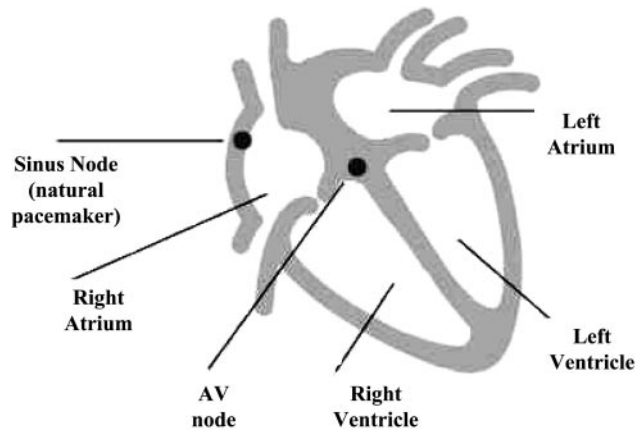


Figure 1. A normal heartbeat begins in an area of the right atrium called the sinus node, the natural pacemaker of the heart. Electrical activation beginning in the sinus node directs the right and left atria to contract. The electrical stimulus then travels through the AV node and to the ventricles, directing them to contract. This electrical activity results in a coordinated heartbeat.

such as atrial fibrillation (a more irregular form of atrial rhythm abnormality). It can happen either spontaneously or when the atrial fibrillation is treated with antiarrhythmic medications.

What Are the Symptoms of Atrial Flutter, and How Can It Be Harmful to You?

Signs and symptoms of atrial flutter may include palpitations, rapid heart

rate, chest pain, shortness of breath, lightheadedness, fatigue, and low blood pressure. However, some people with atrial flutter may not have any symptoms at all.

When untreated, atrial flutter often leads to a rapid heart beat. During atrial flutter, the atrium can beat up to 300 times a minute, and every second beat gets through to the ventricle, resulting in a pulse rate in the range of

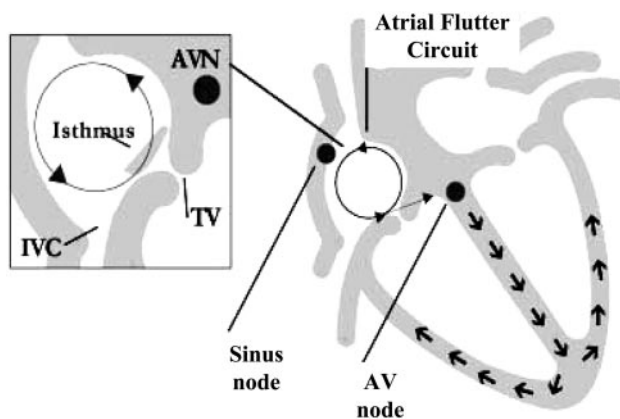


Figure 2. Atrial flutter results from a rapid circuit that occurs most commonly in the right atrium. The circuit goes around itself in the atrium at 300 beats per minute and passes through an isthmus of heart muscle located between the inferior vena cava (IVC) and the tricuspid valve (TV). The IVC is a large vein that brings blood back to the right side of the heart. The TV is a valve that allows blood to pass from the right atrium to the right ventricle. In between the IVC and the TV is a narrow isthmus of tissue called the cavotricuspid isthmus, which is also shown. Without medical therapy, every second atrial flutter beat conducts to the ventricles, resulting in a heart rate of 150 beats per minute. Medical therapy can slow down the rapid heart beat, and various therapies, including electrical cardioversion, antiarrhythmic drugs, or catheter ablation, are capable of restoring and maintaining sinus rhythm. AVN indicates AV node.

150 beats per minute (the normal heart beat is 60 to 90 beats per minute). A sustained rapid heartbeat can be a strain to the heart, and patients with such a rapid heart beat at rest caused by atrial flutter should seek immediate medical attention.

People with atrial flutter may be at an increased risk of a stroke compared with the general population because during atrial flutter blood may not move as rapidly through the upper heart chambers (the atria) as it does during normal sinus rhythm. Slower movement of the blood carries the risk of formation of small blood clots that can cause a stroke. The risk of stroke is not the same for all people with atrial flutter. Therefore, some people with atrial flutter may require treatment with a blood thinner called warfarin to reduce the risk of stroke. If you have atrial flutter and certain additional risk factors for stroke, your treating physician may choose to prescribe a blood thinner. Risk factors for stroke in patients with atrial flutter include prior stroke, heart failure, rheumatic mitral valve disease, high blood pressure, coronary artery disease, and older age. The decision regarding the use of a blood thinner for atrial fibrillation must also be individualized after discussion between the patient and the treating physician.

How Is Atrial Flutter Treated?

The treatment of atrial flutter involves treating the fast heart rate, reducing the risk of stroke, and converting to or maintaining normal sinus rhythm.

Treatment for Fast Heart Rate

Because the heart rate can be rapid in atrial flutter, medications often are used to slow the fast heart beat. Some medications that may be used for rate control include beta-blockers, calcium channel blockers, and digoxin. In addition, some antiarrhythmic drugs (mentioned below) may also have the added benefit of slowing the fast heart rate.



Reducing the Risk of Stroke

Some patients with atrial flutter may be at an increased risk of stroke if certain other risk factors are present. If you have atrial flutter and additional risk factors for stroke, your treating physician may decide to prescribe a blood thinner to reduce your risk of stroke.

Converting Atrial Flutter to Normal Sinus Rhythm

There are 3 categories of treatments that can be used to convert atrial flutter to normal sinus rhythm: electrical cardioversion, medication therapy with antiarrhythmic drugs, and catheter ablation (a procedure with catheters placed in the veins).

Electrical cardioversion is a procedure that involves briefly putting a person to sleep and then delivering a very brief electric shock (which takes about 1 second) through pads temporarily placed on the outside of the chest. This procedure is very effective at converting the heart to normal

rhythm, but a significant percentage of patients with atrial flutter will have a recurrence of the arrhythmia at some time in the future.

Antiarrhythmic medications are sometimes used either to convert a person to normal rhythm or to help maintain normal rhythm after an electrical cardioversion. There are many antiarrhythmic drugs, and although some require a brief hospitalization (2 to 3 days) to be initiated, others may be initiated without hospital admission.

Another procedure that is effective for converting atrial flutter to normal sinus rhythm is *catheter ablation*. This involves the placement of catheters via a small puncture in the veins in the groin. These catheters are advanced through veins and into the right atrium. These catheters may then be used to create a small line of scar tissue that blocks the atrial flutter circuit. The procedure typically is done under conscious sedation, and a patient can usually go home the same day or after a brief overnight stay. Although this pro-

cedure is highly effective at eliminating atrial flutter and preventing future recurrences, not everyone is a candidate for catheter ablation of atrial flutter.

Because atrial flutter may coexist with other arrhythmias that involve the upper chamber of the heart (such as atrial fibrillation), people with a history of atrial flutter have a risk of developing these other forms of atrial arrhythmias in the future. The treatment of atrial flutter may reduce, but not completely eliminate, the risk of these other arrhythmias.

It is also important to note that, when properly treated, atrial flutter is almost never a life-threatening arrhythmia. Furthermore, most people with atrial flutter can be expected to live highly functional and normal lives. The management of this arrhythmia may differ from person to person. If you have atrial flutter, your treating physician will review the various treatment options with you, and together you can decide on the most appropriate management strategy.