MECHANISMS OF DISTURBED RHYTHM, ETIOLOGY OF ARRHYTHMIAS

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Abstract*. Arrhythmias occur when the heart's regular rhythm changes, such as an abnormally fast or excessively slow heart rate. Cardiac arrhythmias are also detected when the heart beats irregularly, skips beats, or when separate parts - the atria and ventricles - contract out of sync.*

A normal heartbeat is controlled by electrical signals sent from a specific segment of heart muscle tissue called the sinus node. This natural pacemaker is located at the top of the right atrium. The heart is divided into four chambers: two atria above and two ventricles below. The atria's job is to fill the ventricles with blood, which then do the hard work of pumping it out to the rest of the body.

During a normal heartbeat, an electrical impulse passes through muscle tissue, activating the ventricles a fraction of a second after the atria. In the case of arrhythmia, there are problems with this signal, the pulse deviates from the norm.

Key words*: Arrhythmia types, arrhythmia symptoms in women, arrhythmia symptoms in men.*

The urgency of the problem: There are many different types and forms of arrhythmias, but those affecting the ventricles are usually more serious than atrial problems. Arrhythmias can be caused by a slow heartbeat (bradycardia) or a fast heartbeat (tachycardia). A low heart rate can occur due to sick sinus syndrome. This happens when the heart's natural pacemaker stops working, causing the electrical signals that make the heart contract to be sent more slowly. This condition is more common in older people and can be worsened by certain drugs that slow the heart rate (eg beta blockers).

Heart block occurs when the electrical signal sent from the heart's upper chambers (atria) to the heart's lower chambers (ventricles) is interrupted. Without this signal being transmitted, the heart cannot contract effectively to pump blood to the body.

An increased heart rate can be a result of atrial fibrillation (AF). Arrhythmia clinic involves random signals that are sent sequentially. They cause fibrillation, which is an uncoordinated shaking of the muscular wall of the atria. Often described as "heart cramps". The atrium does not pump blood efficiently, but the ventricles receive enough blood for the heart to function. However, AFib is potentially dangerous because blood can pool in the atrium and cause a clot to form. If one of these clots travels to the brain, it causes a stroke. AF is the most common form of dangerous arrhythmia, affecting almost 1% of the population. It is more common in older people, affecting about 5 percent of the population over age 69. One study found that one in four people over the age of 40 will develop AF.

Research materials and methods: Ventricular fibrillation (VF) is the most dangerous form of arrhythmia. The ventricles beat, but do not pump blood. If the oscillation does not stop on its own or as a result of the defibrillator output, this complication of the arrhythmia can be fatal.

Observed results: There are two general ways in which arrhythmias develop and can be identified in a given patient.

There may be problems with the initiation of the electrical signal: either the sinus node fires abnormally, or there is a competing impulse elsewhere in the heart.

The second option is problems with the transmission of electrical impulses: it is difficult to connect from the atria to the ventricles (this is often called heart block).

Arrhythmias can occur especially in people with heart disease, because heart disease, damage can prevent signals from the atria from reaching the ventricles, or parts of the heart can't fire normally.

High blood pressure and an overactive thyroid gland also increase the likelihood of arrhythmia. Alcohol can also cause atrial and ventricular arrhythmias. Certain medications, such as decongestants and many prescription medications, make the heart more prone to arrhythmias and should be used with caution in people with heart disease.

There are also hereditary and congenital (present from birth) types of arrhythmia, which often lead to a weak or delayed signal to the ventricles. The ventricles can produce their own signals, but it is often less than 40 beats per minute instead of the 60-90 beats per minute normally found in the sinus node.

Summary: The stethoscope is still a valuable tool for detecting arrhythmias, but there are modern tests that can identify the problem and symptoms of heart arrhythmia in women or men. An electrocardiogram (ECG) shows a graph of the heart's electrical activity using small electrodes attached to the chest. The curve in these graphs indicates the type of arrhythmia. Since the hospital

may not have an arrhythmia, there is a portable EKG that the patient wears at home. Some are turned on continuously for a certain period of time (called a Holter monitor), while others turn on when a person detects an arrhythmia (called an event monitor or loop recorder).

Some arrhythmias may be associated with exercise, so patients may be asked to walk on a treadmill or cycle while connected to an EKG machine.

Electrophysiological study (EPS) is a more complex test. Thin tubes are inserted into a blood vessel in the leg and directed towards the heart. They hold electrodes that locate muscle tissue that may be causing abnormal electrical activity.

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