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THE HEART AND ITS POWER: A VIEW THROUGH THE LENS OF FOLK WISDOM

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Abstract
This article, along with the valuable insights of great Uzbek medical scientists, examines the work of the heart – one of the body's organs that has acquired vital significance in human life.

Keywords: Right ventricle, left ventricle, Abu Ali ibn Sina, Korotkov method, phonendoscope, systolic blood pressure, diastolic blood pressure, pulse, wall arteries.

Introduction

Countless works have been written about the heart by scholars and poets throughout history. This organ never ceases its activity for even a moment. The heart is a kind of “steering wheel” of the human body, guiding and sustaining its vital functions. In the course of a single night, the heart of a person who is in a state of rest and harmony pumps approximately ten thousand liters of blood, continuously supplying tissues and organs with essential substances.

Caring for the heart is the foundation of good health. It is necessary to prevent diseases of the circulatory system and the premature aging of organs. One should always remember that even the strongest body can fail. For humans, the heart is the very basis of life.

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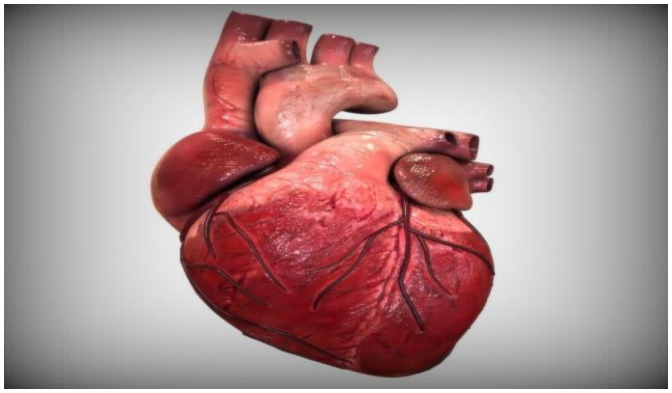
In the following sections, we will explore the results of scientific research devoted to the heart and discuss the characteristics of its functioning.

Main Part

Structure of the Human Heart



The work performed by the heart is primarily determined by the effort generated during the contraction of the ventricles, especially the left ventricle. The right ventricle contributes only about 0.15–0.2 AL of the total workload. With every contraction of the left ventricle, the heart muscle expends energy to push the ejected volume of blood through the entire circulatory system. This energy includes the potential energy required to create sufficient pressure to overcome vascular resistance along the blood's path, as well as the kinetic energy needed to give the blood mass the necessary speed for effective circulation.

$$A = PV_{уд} + \frac{mv^2}{2} = \left[P + \frac{\rho v^2}{2}\right]V_{уд}$$

Here, *A*represents the average blood pressure in the heart; the stroke volume of blood is 70 ml; the density of blood is 1.05×10^3kg/m³; and the velocity of blood flow in the heart is 0.5 m/s at rest. According to the given conditions, the activity of the left ventricle is considered for each heartbeat. The heart contracts 60 times per minute.

Measurement of Blood Pressure

One of the main methods for measuring arterial blood pressure non-invasively is the Korotkoff method, which is based on listening to the sounds of blood flowing

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through an artery compressed by a cuff. The cuff is placed on the subject's wrist, and the pulse is palpated on the brachial artery slightly above the elbow using a stethoscope.

The cuff is inflated to a pressure 10–20 mmHg higher than the point at which the pulse can no longer be detected. Then, by slowly turning the inflation screw and listening to the sounds heard through the stethoscope, the pressure in the cuff is gradually reduced. The relationship between changes in cuff pressure and the Korotkoff sounds is observed.

The systolic pressure is usually 100–120 mmHg, while the diastolic pressure is typically 70–80 mmHg.

A tonometer (sphygmomanometer) is the device used for measuring arterial blood pressure.

Even with complete compression of the artery, no sound is heard. As the cuff pressure decreases, the initial sounds begin to be clearly audible. When measuring arterial pressure at the radial artery, a pulse appears. These sounds are caused by vibrations of the arterial walls below the cuff as blood pulses break through the vessel segment compressed by the cuff only during systole (maximum pressure). The manometer reading at the moment the first tones appear corresponds to the systolic pressure. As the cuff pressure continues to decrease, noises appear whose intensity exceeds that of the tones. These noises are caused by turbulent blood

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flow through the artery, which is partially compressed by the cuff. Then the noise decreases, and the tones are heard again. These tones quickly disappear, and all audible phenomena cease. This occurs when the artery has fully reopened and normal laminar blood flow is restored.

The manometer reading at the moment of the abrupt weakening of the last tones corresponds to the minimal, or diastolic, pressure.

Recently, electronic blood pressure monitors have appeared. They use parametric sensors in which arterial pressure changes certain parameters. Such monitors display the pressure directly on the screen.

High blood pressure, or hypertension, is one of the most common medical problems in modern society. According to the World Health Organization, more than 1.5 billion people worldwide suffer from this condition. Arterial pressure is the pressure exerted by the blood on the walls of blood vessels. In other words, the fluid pressure in the circulatory system exceeds atmospheric pressure. It is measured in millimeters of mercury and consists of two values:

Systolic pressure — the pressure when the heart contracts and pumps blood into the vessels.

Diastolic pressure — the pressure when the heart relaxes between contractions.

According to WHO, high blood pressure causes many diseases and conditions, including:

Stroke. Hypertension increases the risk of stroke due to damage to the blood vessels of the brain.

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Heart disease. High blood pressure increases the workload on the heart, which can lead to heart failure.

Kidney problems. Chronic high blood pressure can lead to kidney disease and even kidney failure.

Vessel damage. High arterial pressure damages the walls of the arteries, which can lead to atherosclerosis.

If you or your loved ones have signs of stage 2 hypertension (blood pressure of 140/90 or higher), do not try to lower the blood pressure on your own, as this may lead to a heart attack or stroke.

In conclusion, it should be emphasized that the great scientist and thinker Abu Ali ibn Sina, one of the founders of classical medicine, left extremely valuable observations regarding arterial pressure and the condition of the cardiovascular system. In his fundamental work The Canon of Medicine, he examined in detail issues related to the characteristics of the patient, the condition of individual organs, the influence of the seasons on human health, and paid great attention to the characteristics of the pulse. These scientific principles, formulated almost a thousand years ago, still retain their significance today and serve as a foundation for understanding the mechanisms of the cardiovascular system.

Ibn Sina emphasized that the pulse is the main indicator of the body's vital force, reflecting the work of the heart, the condition of the vessels, and a person's overall health. He classified various types of pulses and linked their features to the nature of the disease and the individual characteristics of the patient. These observations formed the basis of early diagnostics, far ahead of their time.

In addition, the scholar paid attention to external factors such as climate, seasonal changes, lifestyle, and emotional state. He noted that harmony between a person's internal state and the surrounding environment contributes to the normalization of arterial pressure and to strengthening the cardiovascular system. Modern medicine confirms many of his ideas: the influence of stress, temperature, daily routines, and nutrition on cardiac function is now a proven scientific fact.

Thus, the legacy of Ibn Sina not only reflects the profound wisdom of the past but also remains relevant to modern medical research. His works inspire careful

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attention to one's health and emphasize the need for a comprehensive, holistic approach to studying the human body.

Conclusions

Every person should not remain indifferent to their own health. It is necessary to undergo a medical examination at least once a year. All organs of the human body are created by nature in a remarkably intelligent and harmonious way. Our ancestors said that if a baby is gently stroked, they become happier, grow faster, their face becomes brighter, and their body seems to fill with vital energy. Today, this folk wisdom is confirmed by science: tactile contact truly activates the production of growth hormones, improves the functioning of the nervous system, and strengthens a child's emotional stability.

In the same way, an adult also needs care, attention, and a proper daily routine. Modern research shows that stress, lack of rest, and irregular sleep negatively affect the functioning of the heart, blood vessels, and endocrine system. The body can compensate for overloads for a long time, but sooner or later the moment comes when its resources become exhausted.

Therefore, it is extremely important to build a harmonious lifestyle: maintain a daily schedule, engage in optimal physical activity, eat properly, and undergo preventive check-ups. Taking care of one's own body is not a luxury but a necessity that prolongs an active and fulfilling life.

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