Harsimran Kaur

Physiology

Professor Okerblom

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Overview of the cardiovascular system in older adults

With aging, people experience multiple changes in such components of the cardiovascular system as the myocardium, the cardiac conduction system, and the endocardium. One of the main characteristics that occur during aging in the cardiovascular system are a loss of elasticity, fibrotic changes in the valves of the heart, and infiltration with amyloid. Moreover, the ability of the cardiac system to pump blood through veins and arteries is reduced due to the variety of changes in the structure and function of the heart muscle.

As people age, changes in the cardiovascular system occur. Some common alterations include Heart Function: The heart may undergo structural changes like thickening of the walls or a decrease in elasticity. These changes can lead to decreased efficiency in pumping blood. Blood Vessels: Arteries can become stiffer and less flexible, leading to increased blood pressure. Plaque buildup (atherosclerosis) can also accumulate, narrowing arteries and reducing blood flow. Heart Rate: Resting heart rate might decrease as the heart muscle becomes less responsive to signals. However, the ability to increase heart rate during physical activity might decline. Valve Changes: Valves within the heart may become thicker and stiffer, impacting their ability to open and close efficiently. Blood Composition: The number of red blood cells may decrease, affecting the oxygen-carrying capacity of the blood. Clotting factors might also increase, raising the risk of blood clots. Exercise Tolerance: Generally, older adults might experience reduced exercise to include these changes in the cardiovascular system. Thus, the first thing to discuss is changes in the structure and work of the cardiac system. The main problem that occurs with aging and can cause problems with high blood pressure and other diseases is fibrous tissue and fat deposits in the channels of the cardiovascular system. The natural pacemaker loses some of its cells, which can affect the reduction of cardiac contractions, that is, the reduction of strokes. Another feature is the increase in the size of the heart, especially the left ventricle. The heart wall thickens, and the volume of blood that can be held may decrease despite the increase in heart size. Moreover, normal changes in the heart include deposits of the aging pigment called lipofuscin and the heart muscle cells degenerate slightly.

The next important aspect that changes in the cardiovascular system with aging is the transformation of blood vessels. Such important cells as baroreceptors lose their sensitivity, thereby losing their ability to control and organize blood pressure and make changes to help maintain blood pressure. This is also one of the reasons for the predisposition of the older generation to high blood pressure. Moreover, many people have a feeling of dizziness because there is less blood flow to the brain. In addition, blood capillary walls are compacted, which can provoke a slightly slower rate of exchange of nutrients and wastes (Figure 1). In addition, the most important artery in the human body, called the aorta, also becomes thicker, stiffer and less flexible. This is probably due to changes in the connective tissue of the blood vessel wall. This increases blood pressure and significantly increases and complicates the work of the cardiovascular system, especially the environment, which can lead to the

thickening of the heart muscle. Other arteries also thicken and thicken. In general, most elderly people have a moderate increase in blood pressure.

The last major component of the cardiovascular system that is undergoing changes is blood. This can be triggered by a reduction in the amount of water in the human body, which reduces the fluid in the bloodstream, so blood volume decreases. Moreover, the speed of red blood cells and their number also suffer, which is very serious since these cells are responsible for fighting stress or illness is reduced. A decrease in their performance also affects a slower response to blood loss and anemia. Otherwise, most of the blood cells remain in the same amount, although certain white blood cells decrease in number and ability to fight off bacteria and maintain human immunity.

I n conclusion, maintaining a healthy lifestyle, regular exercise, a balanced diet, and regular check-ups with healthcare providers can help mitigate some of these changes and support overall cardiovascular health in older adults.