Hypertension and cholesterol

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Cardiovascular aggravators result from a series of factors that may be related among themselves or metabolically connected; thus, these may contribute to and determine the onset of future diseases that may affect the functioning of the heart, such as arterial hypertension (SAH)[1]. SAH is frequent in developing and developed countries, and the number of occurrences increases with age[2]. There are, in Brasil, 250,000 deaths per year due to cardiovascular diseases, and SAH is one of the causes in approximately 50% of them[3]. Studies show that its occurrence is between 52% and 63%, which makes it possible for SAH to be considered a public health problem that considerably increases the cardiovascular risk of patients in these cases[1,4-6].

Clinical trials for the management of hypertension show the importance of controlling blood pressure (BP) as a means of reducing the risks of cardiovascular diseases[3]. A review study that included eight trials and more than 15,000 individuals aged 60 years or older indicated that the use of antihypertensive agents reduced stroke by 30%, coronary heart disease by 23%, and mortality by 13%. Patients with SAH have obesity, elevated heart rate, diabetes mellitus, and high cholesterol levels. SAH alone is found in only 13% of men and 20% of women[7]. This shows the importance of detecting, controlling, and treating other aggravating factors, if present, early.

SAH is characterized by several functional and structural changes in the plasma membrane, which are constantly related to changes in metabolism, such as high blood triglycerides, low levels of HDL, and high levels of LDL[8]. The elevation of viscosity in the plasmalemma that occurs in high-pressure carriers shows changes in lipid composition[9]. In cases of high levels of triglycerides and high levels of cholesterol, there is a great transition between the lipids present in the blood and those present in the plasma membranes, which leads to a decrease in the fluidity of the membranes and a change in the transport of ions[8]. An increased supply of cholesterol to plasma membranes was associated with decreased sodium and potassium pump function, reduced sodium efflux, and increased intracellular sodium affinity[10,11]. The decrease in plasma membrane cholesterol has increased the rate at which sodium and potassium pump ions are transported[12,13]. Similarly, the decrease of plasma membrane cholesterol in erythrocytes led to increased sodium efflux and decreased intracellular sodium[14]. The latter may be considered beneficial since the reduction in the sodium levels present inside the cells is an alternative for the prevention and treatment of cardiovascular diseases[15].

Studies show that in people without pre-existing cardiovascular diseases, the use of statins in patients with high lipid levels leads to a reduction in cholesterol

levels with a consequently reduced occurrence of cardiovascular diseases[16]. In Brasil, there has been an increase in the consumption of processed and industrialized foods in recent years, with a reduction in the consumption of healthy foods such as vegetables and legumes[17,18]. This contributes to the elevation of the levels of saturated fat, trans fat, and sugar consumed, leading to an increase in cholesterol levels[19,20], which is associated with diets with high sodium content, which in turn accentuates the increase in BP, thus contributing to the increase of chances of developing hypertension. Thus, it is important to raise the population's awareness of the need to have a healthy diet, since food can determine the emergence of new diseases and comorbidities that, associated or not with other pre-existing factors, can lead to a decrease in health and quality of life.

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