Bohdanova L.O.

TREATMENT OF CARDIOVASCULAR DISEASES IN CHILDREN ACCORDING TO THE FEATURES OF CIRCADE RHYTHMS

Department of Pediatrics, Neonatology and Perinatal Medicine
Bukovinian State Medical University

The theory of biorhythms has a thousand-year history. It is known that in all pathological conditions, desynchronosis occurs in the body, which correlates with the severity of the disease. Therefore, it becomes necessary to use drugs taking into account the rhythm of the body's sensitivity to their effects, that is, chronopharmacodynamics.

In the human body, the most noticeable in terms of rhythmic activity, which is manifested by the rhythms of changes in heart rate and blood pressure, is the cardiovascular system.

In most children with primary arterial hypertension (PAH), the highest blood pressure (BP) is observed between 12:00 and 18:00. With increasing severity of arterial hypertension (AH), the shift of acrophase increases towards nighttime.

When prescribing antihypertensive drugs, it is recommended to use a preventive chronotherapy regimen (taking the drug 1.5-2 hours before acrophase of blood pressure or minute volume of blood circulation. Blood pressure stabilization with chronotherapy occurs 6-9 days earlier than with traditional therapy. It has been proven that short-acting antihypertensive drugs are best used 1.5-2 hours before the acrophase of blood pressure, and prolonged ones - 4-8 hours. If blood pressure is high at night, then prolonged-acting drugs should be used, if low, then short-acting drugs in the 1st half of the day.

It is noted that the use of prolonged angiotensin-converting enzyme inhibitors (ACEI) in patients with hypertension leads to a decrease in blood pressure and to the normalization of its circadian rhythm. In this case, the drug is prescribed once a day. Thus, the use of ramipril in the evening (at 9 pm) has a more pronounced decrease in blood pressure at night, and when it is administered in the morning, morning and afternoon rises in blood pressure are better controlled. In the treatment of hypertension in children with metabolic syndrome (MS), the use of beta-blockers (BB), short-acting calcium antagonists (CA), and thiazide diuretics is not indicated. ACEI are widely used (mainly 2nd and 3rd grade). With the evening appointment of an ACEI, a deeper decrease in blood pressure occurs at night.

The appointment of prolonged dihydropyridine CA is justified, which ensures adequate daily blood pressure control. In patients with a dippers-type blood pressure profile, amlodipine and prolonged-release nifedipine do not disturb the daily blood pressure profile, no matter what time of day (morning or evening) the drug was administered. However, in patients with "non-dippers" desynchronosis, these drugs help to normalize the daily blood pressure profile. Taking into account the circadian rhythm of hypertension, ACEI, CA, ARB (angiotensin receptor blockers) act most effectively in the evening, and BB in the morning. With a hyperkinetic type of blood circulation, preference should be given to beta-blockers, with a hypokinetic type - an ACEI.

When studying the chronoeffectiveness of cardiac glycosides in patients with heart failure, it was found that the maximum therapeutic effect is achieved when strophanthin is prescribed in the morning, korglikon - in the afternoon, digoxin - in the evening. Due to the presence of more unfavorable shifts in hemodynamic parameters in the second half of the day in chronic heart failure, it is proposed to use inotropic drugs and peripheral vasodilators mainly in the evening hours.

In hypertension of heart failure, a violation of oxidative phosphorylation and the development of energy deficiency with destabilization of cell membranes (pacemakers of circadian rhythms) is a pathogenetic basis for the use of L-carnitine preparations. When using them, it must be borne in mind that in the morning hours they enhance energotropic processes in the body, and in the evening - trophotropic ones.

Chronotherapy in pediatrics makes it possible to individualize the treatment of each patient to the maximum extent, to increase its effectiveness and safety. Prescribing drugs, taking into account the circadian sensitivity of the body to them, increases the effectiveness of treatment at significantly lower course doses.