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Intensive Infusion Therapy in Patients in Critical Conditions

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Resume. To characterize such a patient's condition, in which there are disorders of physiological functions and disturbances in the activity of individual systems that cannot be spontaneously corrected by self-regulation and require partial or complete correction or replacement, the term "critical condition" is used.

The vast majority of patients in the intensive care unit are patients who have undergone any emergency or planned surgery. The increase among them in the contingent of patients of older age groups with pronounced age-related involutive changes in all organs and systems of the body, the presence of many concomitant diseases, a decrease in the adaptive-compensatory capabilities of the body, makes it imperative to carefully adequately monitor the state of homeostasis of the patient.

Keywords: cardiovascular system, acute circulatory disorders, infusion therapy, pathogenetically substantiated.

Relevance of the topic. Acute circulatory disorders, which are based on complete decompensation of the cardiovascular system, lead to the development of multiple organ failure syndrome in 72-74% and are the cause of death in patients in the postoperative period.

Infusion therapy has become a familiar element, often used without proper understanding of the indications for it and the possible impact on the patient's body. The development of this important problem is very far from its scientific and practical completion.

The development of infusion therapy is mainly empirical rather than theoretical. This, apparently, can explain the lack of effectiveness of infusion therapy in critically ill patients.

Until now, the question has not been resolved, at what level of the studied parameters of homeostasis of critical patients, the reaction to intensive therapy is adaptive, and at what level the compensatory reaction turns into a pathological process. There are no clear criteria for determining indications for the abolition of infusion therapy.

The importance of developing the problem of the adequacy of infusion therapy is determined by its massive use.

The purpose of research. The purpose of this study is to identify regular violations of the main parameters of the body's functional systems to predict the development of a pathophysiological process, to determine pathogenetically justified, optimal options for conducting intensive infusion therapy that have a beneficial effect on the adaptive-compensatory processes of the cardiovascular and respiratory systems and improve treatment outcomes in critically ill patients. states.

Material and research methods. To study the features of changes in the main parameters of central hemodynamics, the function of external respiration and their relationship in the preoperative period to find indicators-markers of the body's reserve capabilities. Based on the monitoring of the cardiorespiratory system and their orientation and the degree of information content of clinical and physiological changes in critical conditions. To study a complex pathogenetic assessment of the reactions of the cardiorespiratory system to infusion therapy, to determine its adequacy in terms of maintaining adaptation mechanisms.

Research results. The preoperative assessment of the severity of the condition according to the SAPS system in planned patients under 35 years of age was 3.00 points. In the next age group - 3.79 points. In elderly patients, 6.65 points and in patients older than 75 years - 7.96 points.

In urgently operated patients, the level of points was, according to age: 6.12 - 7.16 - 7.65 - 10.61 points.

On average, in the entire population of electively operated patients, the number of complications was 24.0%, in urgently operated patients - 85.3%. In patients older than 60 years, complications occur almost 2 times more often.



Mortality among planned young patients was 2.5%, in the next age group - 4.6%, in elderly patients - 9.8% and in patients older than 75 years - 9.5%. Mortality among emergency patients, according to age, was: 21.4% - 39.8% - 41.8% - 56.6%.

This is a confirmation of the literature data on the decrease in the body's reserve capabilities with age, the weakening of adaptive-compensatory mechanisms that are unable to cope with the stress load resulting from the disease and surgical intervention. All this once again proves the need to find approaches to the treatment of patients in critical condition.

Analyzing preoperative ECGs, one can see an age-related increase in PQ, QRS, QT intervals, as well as the duration of the P wave, which emphasizes the age-related limitation of such a compensatory mechanism as an increase in heart rate.

With increasing age, there is an increase in the number of patients with a deviation of the electrical axis of the heart to the left (0.0 - 11.7 - 27.2 - 34.8%), with myocardial hypertrophy (9.4 - 23.3 - 44.4 - 42, 4%), with changes in the myocardium and insufficiency of its blood supply (0.0 - 15.0 - 60.1 - 78.8%), with the appearance of ectopic foci of excitation (1.9-2.5-8.1 - 16, 7%), with bundle branch block (1.9 - 5.8 - 17.9 - 30.3%), with atrioventricular block (0.0 - 0.0 - 6.3 - 9.1%).

In the older age group, MOS reaches 66.9% of the level of young age, OPS increases to 175.7%, the volumetric blood flow rate decreases to 61.1%, the power of contraction of the left ventricle is up to 67.3%, and its work is up to 73,9%.

At a young age, the number of patients with reduced contractility of the left ventricular myocardium was 16%, in the mature age - 29.8%, in the elderly - 42.5%, in the senile - 46.7%.

In patients older than 75 years, compared with young age, hypodynamic type of blood circulation is 7 times more common.

In patients without identified pathology of respiratory function, reserve volumes of inhalation and exhalation significantly decrease with age when comparing the youngest and oldest age groups, respectively, to 69.5% and 60.2% ($p < 0.01$).

Similar changes are also subject to such indicators of respiratory function as SVC, FVC, FIVC, MVV. All high-speed indicators of respiratory function are significantly slowed down and the exhalation time increases.

Conclusion. Thus, the appearance of disturbances in the respiratory system leads to disturbances in blood flow in the pulmonary circulation, hyperdynamic mode, myocardial overstrain, and with a further increase in changes, to hypodynamia.

With the appearance of obstruction of small bronchi, there is a decrease in OPS to 70.7%, due to which VR increases to 126.6%, and MOS to 119.4%, which is a compensatory reaction and leads to an increase in the number of patients with hyperkinetic type of blood circulation from 45.6 % in patients without identified violations of respiratory function up to 60.0%.

The analysis of patients with obstruction of large bronchi showed the functional tension of the circulatory and respiratory systems. SBP rises to 108.3% of the normal level, OPS increases to 116.1% ($p < 0.05$). Under these conditions, the work of the myocardium is hampered and a decrease in VR to 86.2% is observed, although the MOS remains practically at the same level due to a compensatory increase in heart rate.

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