Ioffe I.V., Posternak G.I., Satsuta S.V., Sokolov A.S., Krivoruchko M.E., Khanin Y.V.

DIFFERENTIATED INOTROPIC SUPPORT AS A MEAN OF PROPHYLACTIC OF THE HEPATORENAL SYNDROME IN PATIENTS WITH ABDOMINAL SEPSIS

SD "Lugansk State Medical University", Lugansk-Rubeznoe, Ukraine

***Abstract**. At article, we showed the influence of dopamine and dobutamina on splahnitichny blood flow and their impact on cellular metabolism in patients with abdominal sepsis.*
***Key words:** inotropic support, patients, sepsis.*

Acute liver failure and hepatorenal syndrome (ALFHS) is a key component of multiple organ dysfunction syndrome (MODS) in patients with abdominal sepsis [1].

Experimental and clinical studies provide evidence to suggest that severe systemic vasodilation in conjunction with vasoconstriction of splanhic area and subsequent tissue hypoxia can stimulate gypofiltraion of kidney and fluid retention in parenchymal organs, violation of hepatic blood flow with the development of liver failure [2]. This mechanism is one of the key in the pathogenesis of ALFHS that develops in patients with abdominal sepsis. One of the main ways of preventing and treating this syndrome, along with adequate surgical debridement, antibiotic and fluid therapy - is the use of tools that improve systemic hemodynamic and blood flow splanhnic, but do not have the opposite effect on the kidneys and liver. Traditionally, the most commonly used drug that stimulates the central hemodynamics, improves blood flow and a diuretic effect, as dopamine. Largely thanks to this its properties dopamine routinely used for many years and is used for prevention and treatment of MODS in patients with abdominal sepsis. At the same time, accumulated over the

past years, data indicate the presence of dopamine in cumulative properties and an ambiguous effect on the endocrine profile in critically ill patients [3]. An alternative to it is considered nondopaminerg inotropes - dobutamine [4]. At the same time, the available data in the literature suggest that the restoration of splanhnic blood flow accompanied by postischemic reperfusion syndrome, translocation, which may lead to the generalization of inflammatory mediators, relapse of systemic inflammatory response and the development of MODS [5].

The aim of the present work - to determine the effect of low doses of dopamine and dobutamine in the liver and kidney function and dynamics of cytokine status in patients at risk of ALFHS on the background of abdominal sepsis in the early postoperative period.

Materials and methods.

A prospective, randomized study in 30 male patients with a risk of ALFHS on the background of abdominal sepsis (6-8 points on the scale SOFA). The median age was 50 years. Patients were divided into 2 groups. In group 1 (n = 16) was administered at a dose of dopamine of 200 g / min, at 2 (n = 14) - dobutamine in a dose of 175 mcg / min. The drug is administered during the first three postoperative days.

Studied standard clinical and laboratory parameters septic syndrome, hepatic and renal function (creatinine, bilirubin, ALT serum hourly diuresis), and the content in the blood plasma levels of TNF-α, IL-1 and IL-4. These parameters were studied at 1, 2 and 3 postoperative days. Statistical report - license package Microsoft Exel.

Postoperatively, patients received comparable intensive care according to current protocols, which was unchanged throughout the study.

Results and discussion.

Substantial and statistically significant differences in clinical and laboratory parameters in patients with sepsis syndrome in both groups were observed at all stages of the study, except for indicators of body temperature and leukocytosis (Table. 1).

Table. 1.

The dynamics of clinical and laboratory parameters of septic syndrome

The dynamics of clinical and laboratory parameters of septic syndrome	Group Stages	Performance of the of the study patients		
		1-st day	2- st day	3- st day
The number of respiratory movements, min	1	28±2	24±3	26±3
	2	27±2	23±2	27±3
Heart rate, min	1	110±5	105±3	98±2
	2	108±4	103±4	97±2
Body temperature, C^o	1	38,8±0,15	37,6±0,12*	37,5±0,15
	2	38,7±0,13	37,7±0,11*	37,6±0,15
White blood cell count*10^9	1	18,5±2,1	16,7±1,1	16,5±1,5
	2	18,7±2,2	17,1±1,1	16,7±1,3
Immature forms, %	1	16,5±1,4	12,8±1,4	9,7±1,4*
	2	16,7±1,1	13,1±1,3	11,2±1,2*

All patients had abnormal liver function and kidney failure, which appeared clinic hyperbilirubinemia, increased alanine transferase and creatinine (Table. 2).

Table. 2.

The dynamics of clinical and laboratory parameters hepatorenal functions on the stages of the study

The dynamics of clinical and laboratory parameters hepatorenal functions on the stages of the study	Group Stages	Performance of the study patients		
		1st day	2nd day	3rd day
Bilirubin, mg / dL	1	23,9 ± 0,2	13,8 ± 0,2	13,8±0,2
	2	21,5 ± 0,2	13,9±0,2	13,7±0,2
Alanine transferase/ mmol	1	1,5±0,1	1,3±0,1	1,4±0,1
	2	1,5±0,2	1,4±0,1	1,5±0,1
Creatinine in mg / dL	1	2,7±0,1	2,6±0,1	2,5±0,1
	2	2,6±0,3	2,0±0,2	1,6±0,1**
Diuresis, ml / h	1	55±2	90±4*	115±10**
	2	68±4	74±5	75,7±5

Note: * - p <0.05 compared with the original data,** - P <0.05 for the comparison between groups.

During the research it was found that dopamine stimulated diuresis, but does not change creatinine clearance. Conversely, dobutamine caused a significant increase in creatinine clearance, but without a significant increase in diuresis. Reliable both positive and negative effects on their liver function tests were observed.

Studies have shown that the use of dopamine in the prevention and treatment ALFHS shown in patients with reduced diuresis, while in patients with preserved diuresis, but a reduced filtration capacity, substantiates the use of dobutamine. Question combined their use remains controversial and requires further research.

Background in the study of cytokine was observed a significant increase of concentrations of pro-inflammatory cytokines TNF-α and IL-1 and a decrease in IL-4, anti-inflammatory in both groups, indicating that the development of the phenomenon of reperfusion (Table. 3).

Table 3.

Dynamics of cytokine background on the stages of research

Dynamics of cytokine background on the stages of research	Group Stages	Performance of the study patients		
		1st day	2nd day	3rd day
TNF-α, pg/ml	1	28,5	37,6	50,4*
	2	27,6	38,4	51,2*
IL-1, pg/ml	1	8,2	12,3	12,5
	2	7,9	11,4	12,1
IL-4, pg/ml	1	20,5	8,4	9,2
	2	19,8	7,9	9,1*

Note: * - p <0.05 compared with the original data.

Despite the relative interpretation of these indicators [6], analyzing the results, it can be noted that dopamine and dobutamine causes symptoms of the phenomenon of reperfusion in the form of increasing concentrations of proinflammatory cytokines. At the same time, routine methods of investigation of the dynamics of clinical and laboratory parameters of septic syndrome indicates a decrease in its severity. At the same time, there was no significant positive side of the liver. Given the physiological characteristics of the portal system can assume that one of the important reasons for preserving hepatic dysfunction when restoring blood flow is secondary splanhnitic

cytokine load and reticuloendothelial system. Consequently, one of the main ways of preventing the onset and progression of post-ischemic reperfusion syndrome, translocation can be recovery or, at least, the optimization of the natural barrier function of the intestine.

Conclusion. 1. Patients with primary dopamine acts as a diuretic and improves the creatinine clearance. 2. Dobutamine increases creatinine clearance without significant changes in urine output. 3. Both drugs cause the development of the phenomenon of post-ischemic reperfusion-translocation.

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Резюме. В роботі показано вплив дофамина и добутаміна на сплахнитичний кровотік та їх вплив на клітинний метаболізм у хворих на абдомінальний сепсіс.
Ключові слова: инотропна піддтримка, паціенти, сепсис.

Резюме. В роботе показано влияние дофамина и добутамина на сплахнитичный кровоток и их влияние на клеточный метаболизм у больных с абдоминальным сепсисом.
Ключевые слова: инотропная поддержка, пациенты, сепсис.

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