METHODS OF INTRAOPERATIVE CORRECTION OF HEPATIC DYSFUNCTION

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DOI:10.24412/2500-1000-2022-7-3-27-29

Abstract. *The hepatobiliary system pathology remains an urgent problem of modern medicine. The liver regeneration ability largely determines the outcome of surgery and postoperative complications. The aim of the study was to enhance the prevention of postoperative hepatic dysfunction by activating methylation processes. The study involved experimental and clinical phases. In the experimental unit, the best results (15,17% acceleration of liver mass recovery) were observed with intrahepatic administration of cyanocobalamin, and intrahepatic administration of cyanocobalamin with intraperitoneal administration of ademethionine (12,04% acceleration). In clinical conditions, intravenous administration of cyanocobalamin and ademethionine contributed to the normalization of indicators of cholestasis syndrome, hepatic cell insufficiency and inflammation, a decrease in cytolysis, hepatic cell insufficiency. Thus, the proposed method of activation of methylation processes allows to increase the reparative potential of the liver, ensures the restoration of its anatomical and functional integrity, prevents the development of postoperative hepatic dysfunction.*

Keywords: *hepatic dysfunction, cyanocobalamin, ademethionine, regeneration, cholecystectomy.*

Introduction. Despite the constant improvement of surgical techniques, the pathology of the hepatobiliary system remains an urgent problem of modern medicine [1-4]. The literature data of recent years indicate a steady trend towards an increase in chronic diffuse liver diseases associated with postoperative changes in liver tissue [2]. Surgical interventions on the liver remain among the most difficult in the abdominal surgery section [3, 5]. The ability of liver tissue to regenerate largely determines the outcome of surgery and the risk of postoperative complications [1, 5]. Despite the high level of development of modern medicine, the number of postoperative complications after liver surgery ranges from 18,2% to 71,4%, while liver dysfunction develops in 8,3-14,4% of cases, which indicates the need to influence the rate of regeneration of the remaining liver tissue [3, 4, 6].

A comprehensive study of diseases of the hepatobiliary system is determined by medical and social aspects – their progressive course not only worsens the quality of life, but causes the occurrence of severe complications leading to disability [3, 5]. Thus, the search for new ways to stimulate the regeneration of liver tissue and improve the functional state of the liver is an actual task of modern medicine.

The aim of the study was to improve the prevention results of postoperative hepatic dysfunction by activating methylation processes.

Materials and methods. The study was carried out in two blocks – experimental (I) and clinical (II). In block I Wistar rats underwent resection of 70% of the initial liver mass: in Group 1 (n=24) – prevention of postoperative hepatic dysfunction was not performed; in 2 Group 2 (n=24) – 0.9% NaCl solution was administered intrahepally after resection: in Group 3 (n=24) – ademethionine was administered, in Group 4 (n=24) cyanocobalamin was administered; in Group5 (n=24) – intraperitoneal ademethionine was administered; in Group 6 (n=24) – cyanocobalamin was administered, in Group 7 (n=24) ademethionine and cyanocobalamin intraperitoneally were administered; in Group 8 (n=24) ademethionine intraperitoneal, cyano-

cobalamin intrahepatic were administered. The therapies were discontinued on the 1st, 5th, 7th, 14th day after surgery.

The second block of the study was clinical, and included 2 groups: in the control group (n=15), standard treatment was used in patients after laparoscopic cholecystectomy: in the case group (n=15), standard treatment after laparoscopic cholecystectomy was supplemented with intravenous administration of ademethionine and cyanocobalamin. The result was evaluated using clinical, laboratory, instrumental, morphological and statistical research methods.

Results. In the experimental block, we found that intrahepatic administration of cyanocobalamin accelerates the recovery of liver mass by 15,17%, reduces oxidative stress by 1,3 times, increases the concentration of growth factors by 2,1 times, the proliferation index by 7,8 times, compared with the 1st group ($p<0,05$); intrahepatic administration of ademethionine significantly reduces proliferative activity by 1,2 times, promotes the development of fibrous changes; intrahepatic administration of cyanocobalamin with intraperitoneal administration of ademethionine accelerates the recovery of liver mass by 12,04%, improves all biochemical parameters and relieves oxidative stress, increases the concentration of growth factors by 1,3 times, the proliferation index rose by 6,4 times, compared with Group 1 ($p< 0,05$).

In clinical conditions we found that intravenous administration of cyanocobalamin and ademethionine in patients after laparoscopic cholecystectomy contributes to the normalization of indicators of cholestasis syndrome, hepatic cell insufficiency and inflammation, a decrease in cytolysis by 2,5-3,9 times, hepatic cell insufficiency by 1,1-1,4 times. In the control group the decrease in biochemical parameters was statistically insignificant.

Conclusion. The proposed method of activation of methylation processes allows to increase the reparative potential of the liver, ensures the restoration of its anatomical and functional integrity, prevents the development of postoperative hepatic dysfunction.

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СПОСОБЫ ИНТРАОПЕРАЦИОННОЙ КОРРЕКЦИИ ПЕЧЕНОЧНОЙ ДИСФУНКИИ

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Аннотация. *Патология гепатобилиарной системы по-прежнему остается актуальной проблемой современной медицины. Способность печеночной ткани к регенерации во многом определяет исход оперативного вмешательства и риск возникновения послеоперационных осложнений. Целью настоящего исследования являлось улучшение результатов профилактики послеоперационной печеночной дисфункции путем активации процессов метилирования. Исследование выполнено в двух блоках – экспериментальном и клиническом. Изучено влияние различных способов введения цианокобаламина и адеметионина на развитие послеоперационной печеночной дисфункции. В экспериментальном блоке наилучшие результаты наблюдались при внутрипеченочном введении цианокобаламина, что ускоряет восстановление массы печени на 15,17%, и внутрипеченочном введении цианокобаламина с внутрибрюшинным введением адеметионина, что ускоряет восстановление массы печени на 12,04%. В клинических условиях внутривенное введение цианокобаламина и адеметионина способствовало нормализации показателей синдрома холестаза, печеночно-клеточной недостаточности и воспаления, снижению показателей цитолиза, печеночно-клеточной недостаточности. Таким образом, предложенный способ активации процессов метилирования позволяет повысить репаративный потенциал печени, обеспечивает восстановление ее анатомической и функциональной целостности, предупреждает развитие послеоперационной печеночной дисфункции.*

Ключевые слова: *печеночная дисфункция, цианокобаламин, адеметионин, регенерация, холецистэктомия.*