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CHANGES IN LABORATORY DATA AFTER LIVER SURGERY, EARLY POSTOPERATIVE PERIOD

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SUMMARY

Analysis of the results of treatment of 31 patients after surgical interventions on the liver, showed the necessity of careful studies before surgery. Laboratory studies after surgical interventions made it possible to assess the condition of the body and determine the treatment tactics in the postoperative period.

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INTRODUCTION

Surgical interventions on the liver, accompanied by a mechanical effect on the organs and tissues of the body, require careful preparation to avoid complications in the postoperative period and the treatment of various pathologies.

The end of the operation and the restoration of the body is often difficult. The tasks of the postoperative period are to provide conditions for healing of wounds and the body as a whole, rehabilitation in the early and delayed periods and prevention of postoperative complications from the wound [1].

In the studies of scientists to assess the body in the pre- and postoperative period, to assess the risk of developing various complications, the results of laboratory studies were given great importance. In the observations of operated patients, laboratory data allow us to determine the degree of deviation from the norm, the state of the body and objectively justify the choice of treatment tactics in the postoperative period, which reduces complications and mortality to 9.6% [2, 3].

Various liver disease requiring surgical treatment by resection, pose a risk of complications in the intra- and postoperative periods. Scientists use various methods for the prevention of complications - blood loss by reducing pressure in the hepatic veins, controlled hypoventilation of the lungs during artificial ventilation, and the use of various hemostatic methods [4].

The most frequent complications were observed with extensive hepatic resections, and reached 66% - 72.2%, postoperative mortality in which amounted to 11% [5].

According to the observations of surgeons, post-resection complications during surgical interventions on the liver amounted to 42%. Moreover, hepatobiliary (26%) prevail among complications, cardio-respiratory (20%) and purulent-septic complications (13%) are also noted [6].

AIM OF THE STUDY

To study the features of the postoperative period in patients with hepatobiliary system pathology who underwent surgery on the liver by analyzing the results of laboratory tests.

MATERIALS AND METHODS

A retrospective analysis of the results of treatment of 31 patients who underwent

surgery on the liver was performed. There were 19 men (61.3%), women 12 (38.7%).

The age of patients ranged from 18 to 62 years. Table 1 provides the age of the studied patients according to the gradation recommended by WHO [7].

Table 1 – the age of the studied patients.

Age	Men	Women
18-44 years	15 (48,4%)	9 (29%)
45-59 years	4 (12,9%)	2 (6,4%)
60-74 years	-	1 (3,2%)
Total	**19 (61,3%)**	**12 (38,7%)**

Evaluation of patient treatment was conducted according to laboratory blood tests (general analysis, biochemical analysis), urinalysis, culture studies, sputum, throat swabs and nose. For statistical processing, the SPSS program was used.

Patients had various liver pathologies. In 25 (80.6%) cases there were benign tumors, in 6 (19.4%) cases of liver echinococcosis. Among concomitant diseases, it should be noted the presence of hypertension in 3 (9.7%), diabetes mellitus in 2 (6.4%) and urolithiasis in 1 (3.2%) patients. The disease duration was recorded in the history from 2 to 4 months, taking into account the long diagnostic route.

THE RESULTS OF THE STUDY

Based on the analysis of the results of the study, it was revealed that hepatomegaly was observed in 3 (9.6%) men and 1 (3.2%) among women with negative laboratory results for the presence of hepatitis and the absence of a history of chronic liver diseases.

Before surgery, the average hemoglobin value was 138 ± 14.73 g / l. On the first day after surgery, hemoglobin significantly decreased and amounted to 127.26 ± 15.19 g / l (<0.0001); on the third and fifth days, a decrease was noted to 112.68 ± 13.43 and 112.52 ± 14.84, respectively (<0.0001); on the seventh day, the value averaged 109.44 ± 24.99 g / l (<0.0001).

There was a significant decrease in the number of red blood cells in the postoperative period from 4.99 ± 0.67 x 1010 to 4.44 ± 0.67 x 1010; 3.89 ± 0.62x1010; 3.94 ± 0.67x1010 and 3.97 ± 0.64x1010 on the 1st, 3rd, 5th and 7th days of the postoperative period, respectively (<0.0001) (Figure 1).

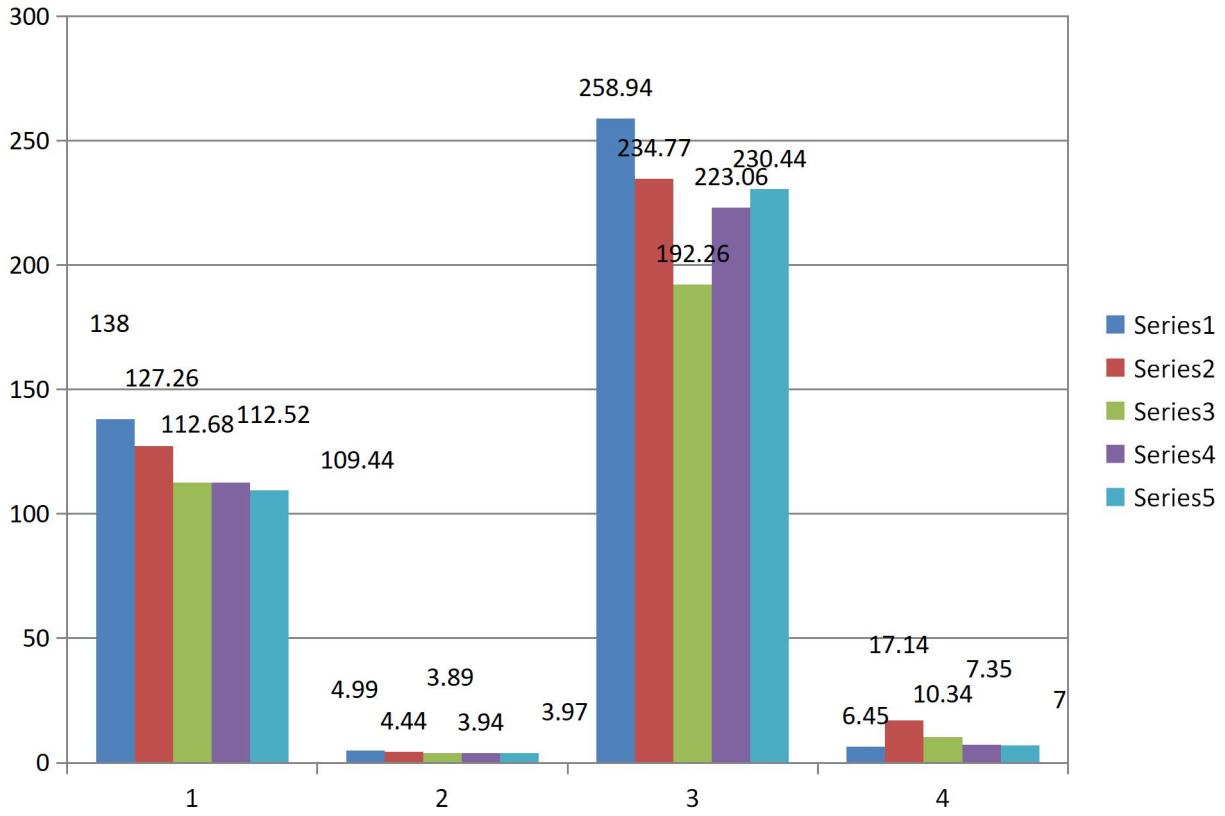

Figure 1 – Indicators of blood before surgery and in the postoperative period

Platelets decreased from 258.94 ± 64.81 to 234.77 ± 68.02 - 230.44 ± 67.7 (<0.005) in the first and on the seventh day of the postoperative period.

An increase in the number of leukocytes in the blood was observed on the first day from 6.45 ± 2.27x10 before the operating period to 17.14 ± 5.63x10 (<0.001); in the next 3, 5 and 7 days, a decrease to 7.0 ± 1.9x10 was observed.

The above data confirm the fact of blood loss in varying degrees of volume, an increase in blood cells on the 5-7th day indicates compensatory mechanisms of the body aimed at restoring cells in the postoperative period.

Observed significantly increase stab neutrophils from 3.14% ± 2.38 to 14.5% ± 6.56 (<0.001) on the first day, followed by a decrease to 7.53% ± 4.16 on day 3 and to normal on 5-7 days.

A similar increase in segmented neutrophils was observed 1 day after surgery from 46.16% ± 20.38 to 71.16% ± 1.28 (<0.001), followed by a decrease to 59.09% ± 12.96.

The increase in neutrophils in the first day of the postoperative period is associated with surgical intervention and a possible reaction of the body to an infectious agent.

There were no significant changes from other blood cells: the number of basophils (1.0% ± 0.00 - 1.05% ± 0.23), eosinophils (1.34% ± 0.77 - 2.13% ± 2, 18), monocytes (5.28% ± 4.07 - 6.96% ± 4.96), lymphocytes (9.45% ±

12.91 - 12.91% ± 10.2) were within acceptable limits.

An increase in ESR (erythrocyte sedimentation rate) from 8.1 ± 5.27 mm / h to 13.48 ± 12.18 mm / h on the first day and to 17.86 ± 10.17 mm / h on day 7 (<0.001) due to the postoperative condition of the body.

Surgical intervention is a vital manipulation for the body, at the same time it leads to certain changes and other parameters of the blood during biochemical studies.

Protein metabolism in the body is reflected in the protein content in the blood serum. A natural decrease in blood protein was observed from 71.52 ± 8.07 g / l to 52.53 ± 11.55 (<0.001) on the first day; on the 7th day, the protein level was unreliable increased to 56.05 ± 8.49 g / l (Figure 2).

The change in the level of albumin did not have a significant difference, the level ranged from 63 ± 6.55 g / l to 68.0 ± 3.02 g / l, a slight increase may be due to the water-deficient state of the body.

Alpha globulins were increased from 2.51% ± 0.74 to 11.25% ± 12.54 on the 3rd day after surgery, beta-globulins from 8.8% ± 2.42 to 12.05% ± 2.86 and gamma globulins were reduced from 15.07% ± 3.34 to 13.7% ± 1.77.

Certain changes in urinary system parameters were observed. Creatinine increased slightly by 5% from 68.45 ± 14.02 μmol / L to 72.13 ± 21.88 μmol / L on the first day after surgery (<0.001). On day 3-5, there was a decrease to 56.31 ± 14.2 μmol / L. Urea level decreased from 5.21 ± 7.31 mmol / L to 2.92 ±

1.22 mmol (<0.001), in general, the indicators remained within the normal range.

An increase in total bilirubin from 11.3 ± 5.67 μmol / L to 38.49 ± 15.35 (<0.001) on the first day after surgery indicate

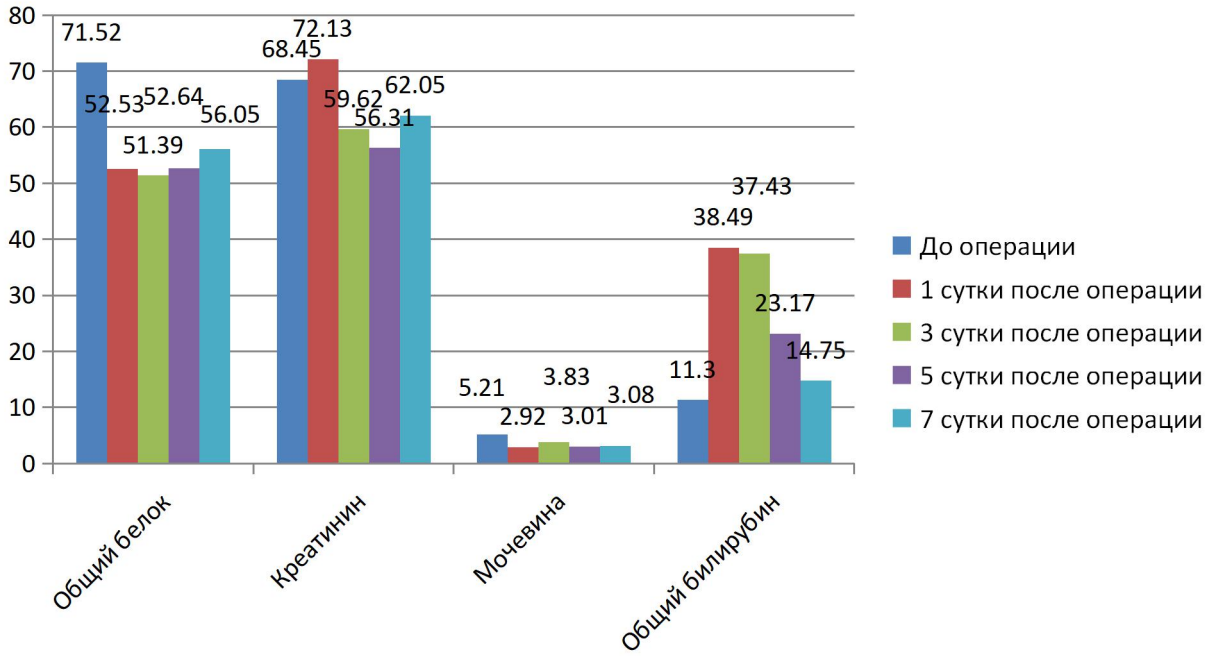

Figure 2 – Parameters of a biochemical blood test

possible toxicity of the use of drugs used during surgery. In support of this, an increase in direct bilirubin was noted from 4.04 ± 2.02 μmol / L to 14.47 ± 7.72 μmol / L and 18.07 ± 10.66 μmol / L (<0.001) on the first and third days of postoperative period. Normal values were observed on the 7th day - 6.87 ± 4.08 μmol / L.

ALT (alanine aminotransferase) increased by 69% from 0.87 ± 2.47 units / L to 2.84 ± 1.08 units / L. AST (Aspartate aminotransferase), an enzyme that also rises in the blood with damage to the liver or heart muscle, increased on the first day after surgery to 3.13 ± 1.3 u / l from 1.73 ± 5.79, and decreased to 1, 34 ± 0.85 on the 7th day. These parameters confirmed the hepatotoxicity of the drugs used or due to liver resection.

Fibrinogen - a protein necessary to stop bleeding during surgery, is one of the main factors in blood coagulation. A compensatory insignificant increase was noted from 2.89 ± 0.96 g/l to 3.15 ± 3.61 g/l and 4.38 ± 5.32 g/l in the blood on days 3 and 5 after surgery operation.

The prothrombin time was increased from 13.34 ± 4.8 sec. up to 22.08 ± 7.63 sec. (<0.001), a subsequent decrease was observed on the 7th day to 17.11 ± 4.89 sec.

The INR indicator ("international normalized ratio") did not significantly differ in the indicators before the operation and in the following days, and varied from 1.28 ± 1.63 units. up to 1.09 ± 0.19 units.

The change in APTT (Activated Partial Thromboplastin Time) was not significant from 31.32 ± 7.15 sec. to 35.83 ± 12.04 sec. on the first day, with a decrease to 30.78 ± 6.28 sec. on the 7th day. The increase in the first day is associated with surgical intervention.

The increase in body temperature was subfebrile on the first day of the postoperative period.

Additionally, the cultivation of opportunistic microbial flora from the throat, nose and urine was obtained by cultural methods. These study results were not significant in a clinical study.

CONCLUSIONS

Based on the analysis of clinical and laboratory data, the following conclusions are made:

1. The postoperative period in patients undergoing liver resection is accompanied by a decrease in hemoglobin by 18.8% and erythrocytes by 21%; platelet count by 10%; an increase in white blood cells by 2.6 times and ESR by 2.2 times.
2. The increase of total bilirubin by 3.4 times, ALT by 2.8 times and AST by 1.8 times showed the impact of the surgical intervention on the state of the hepatobiliary system, which requires medication correction in the postoperative period.
3. The above mentioned changes in laboratory research confirm the necessity of thorough preoperative planned preparation of patients with liver pathology before surgical intervention to avoid postoperative complications.

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