



## An Integrated Approach to The Treatment of Acute Pancreatitis in Patients with Cirrhosis of The Liver.

<sup>1</sup>Urakov Sh.T., <sup>2</sup>Mirzoev V.I., <sup>3</sup>Abdurakhmanov M.M., <sup>4</sup>Makhmanazarov O.M.

<sup>1,2</sup> Bukhara, Uzbekistan, postal code 200100

Bukhara State Medical Institute named after Abu Ali ibn Sina, Uzbekistan,

Bukhara, A.Navoi str., 1 Tel.: +998(65) 223-00-50 e-mail: info@bsmi.uz

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### KEYWORDS

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functional  
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microcirculation,  
portal blood flow.

### ABSTRACT:

The relevance of the problem of diagnosis and treatment of acute pancreatitis in patients with liver cirrhosis is due to the high prevalence of this surgical disease and its significant contribution among emergency diseases of the abdominal cavity. Research shows that the development of acute pancreatitis is associated with disturbances in the drainage function of the pancreatic ducts, which can be caused by various external influences. The clinical issues, diagnosis and treatment of acute pancreatitis associated with liver cirrhosis have not been sufficiently studied due to the complexity of its effects on the body and limited information about the structure of endotoxemia in this disease. The proximity of the liver and pancreas, as well as their functional relationships, pose a potential risk of developing damage and dysfunction of the liver in acute diseases of the pancreas. Treatment of patients with acute pancreatitis and cirrhosis of the liver includes complex measures aimed at normalizing the volume of circulating fluid and electrolyte balance, as well as improving microcirculation and portal blood flow. This article is of scientific interest and may contribute to the development of more effective methods for diagnosing and treating acute pancreatitis in patients with liver cirrhosis.

### RELEVANCE.

The relevance of the problem of diagnosis and treatment of acute pancreatitis in practical healthcare is confirmed by the high prevalence of this surgical disease, accounting for approximately 3% to 10% of all emergency diseases of the abdominal organs. The increasing incidence rate indicates the need for effective diagnosis and treatment of this condition.

Studies and observations indicate that the development of acute pancreatitis is associated with impaired drainage function of the pancreatic ducts. Damage to the pancreas, impaired liver function and changes in enzyme synthesis are associated with various factors [4–6, 9]. For example, as a result of drinking alcohol and its surrogates, the secretory activity of the pancreas is greatly enhanced. Various factors such as pancreatitis, infections, food intolerance and

others lead to duodenitis with swelling of the large duodenal nipple, which impedes the outflow of pancreatic juice and bile. Under such conditions, they have a toxic effect on the exocrine activity of the gland, causing degenerative changes in acinar cells and contributing to the development of acute pancreatitis [1, 2, 4, 6, 7]. Despite the research, the clinical issues, diagnosis and treatment tactics of acute pancreatitis associated with liver cirrhosis are still insufficiently studied and are often controversial. This is due to the multifaceted effects of pancreatitis on the body and the lack of data on the structure of endotoxemia in this disease. The duration of the disease determines the degree of necrosis, atrophy and fibrosis of cells in the pancreatic parenchyma. Similar changes are also observed in the liver.

Due to the physical proximity of the liver and pancreas, as well as their strong functional relationships, there



is a potential danger of damage and impairment of liver functionality in the event of the development of acute pancreatic diseases [6, 7].

The problems of diagnosis and treatment of patients suffering from acute pancreatitis against the background of cirrhotic liver lesions are of significant scientific interest and belong to the category of highly complex problems. Liver damage significantly increases the risk of death [2, 4, 5]. The systemic inflammatory response caused by acute pancreatitis aggravates functional disorders in the affected liver and is accompanied by severe disturbances in the portal circulation [10–13].

In the treatment of patients suffering from acute pancreatitis with cirrhosis of the liver, complex measures are used aimed at normalizing the volume of circulating fluid and the balance of electrolytes. Anti-enzyme drugs, gastric secretion blockers, respiratory and inotropic support, antibiotics, parenteral and early enteral nutrition, as well as extracorporeal detoxification methods are used as therapeutic agents [7, 1]. Particular attention is paid to improving microcirculatory processes and controlling diffuse intravascular coagulation [7, 14–16].

To achieve these goals, various pharmacological drugs are used, including pentoxifylline (Trental), agapurine, low molecular weight heparins, and blood substitutes such as Reogluman and Reomacrodex [7]. In recent years, the drug Actovegin has been widely used to correct pathological changes in the vascular bed. This drug has endoprotective properties, improves oxygen utilization, increases energy metabolism and enhances glucose transport into cells due to

the activity of carriers. Due to the presence of isonyl-phospho-oligosaccharides, Actovegin also helps to increase the metabolic activity of the microvascular endothelium [17, 18].

## PURPOSE OF THE STUDY

The main objective of this study was to optimize the dysfunction of microcirculation in the liver and portal blood flow in the treatment of patients with acute pancreatitis complicated by cirrhotic liver lesions.

## MATERIALS AND METHODS.

As part of this study, 72 patients were observed in the main group who were diagnosed with acute pancreatitis in the age range from 22 to 55 years. Of these, 67 were men and 5 were women. During the treatment of all patients, the drug Actovegin was used at a dose of 10 ml once a day in 0.9% saline to correct the pathology of the microvasculature and portal blood flow.

The comparison group consisted of 46 patients with a similar pathology, who were treated with the drug Pentoxifylline to correct microcirculatory disorders and portal circulation. The diagnosis of “acute pancreatitis” was established on the basis of clinical, laboratory and instrumental data. The examination complex included clinical and laboratory diagnostics, including clinical and biochemical blood tests, as well as ultrasound examination of the abdominal organs, esophagogastroduodenoscopy and laparoscopy.

**Table 1.**

Comparison of patient groups by number, age, gender and use of drugs in treatment

Group	Number of patients	Age (years)	Gender (M/F)	Drug used in treatment
Main	72	22-55	67/5	Actovegin
Comparative	46	22-55	42/4	Pentoxifylline

Determination of the concentration of toxic elements in the blood was carried out in accordance with international standards defined by the International Classification of

Diseases, 10th revision (ICD-10). The severity of the patients' condition was assessed using the criteria of the SAPS scale. All patients had a history of cirrhosis lasting more than 5



years. Upon admission, the patients' condition was assessed as severe based on the SAPS scale, corresponding to a value of  $8.8 \pm 0.59$  points. During surgical treatment, the clinical and morphological condition of the liver was assessed. The most informative methods for diagnosing liver lesions were ultrasound with Dopplerography, computed tomography of the liver and laparoscopy.

The data obtained as a result of the studies were compared with the results of clinical blood tests and biochemical indicators of the functional state of the liver.

Control studies using clinical and biochemical blood tests were carried out daily in the intensive care unit and every 3 days after the patients' condition was stabilized and they were transferred to the surgical department.

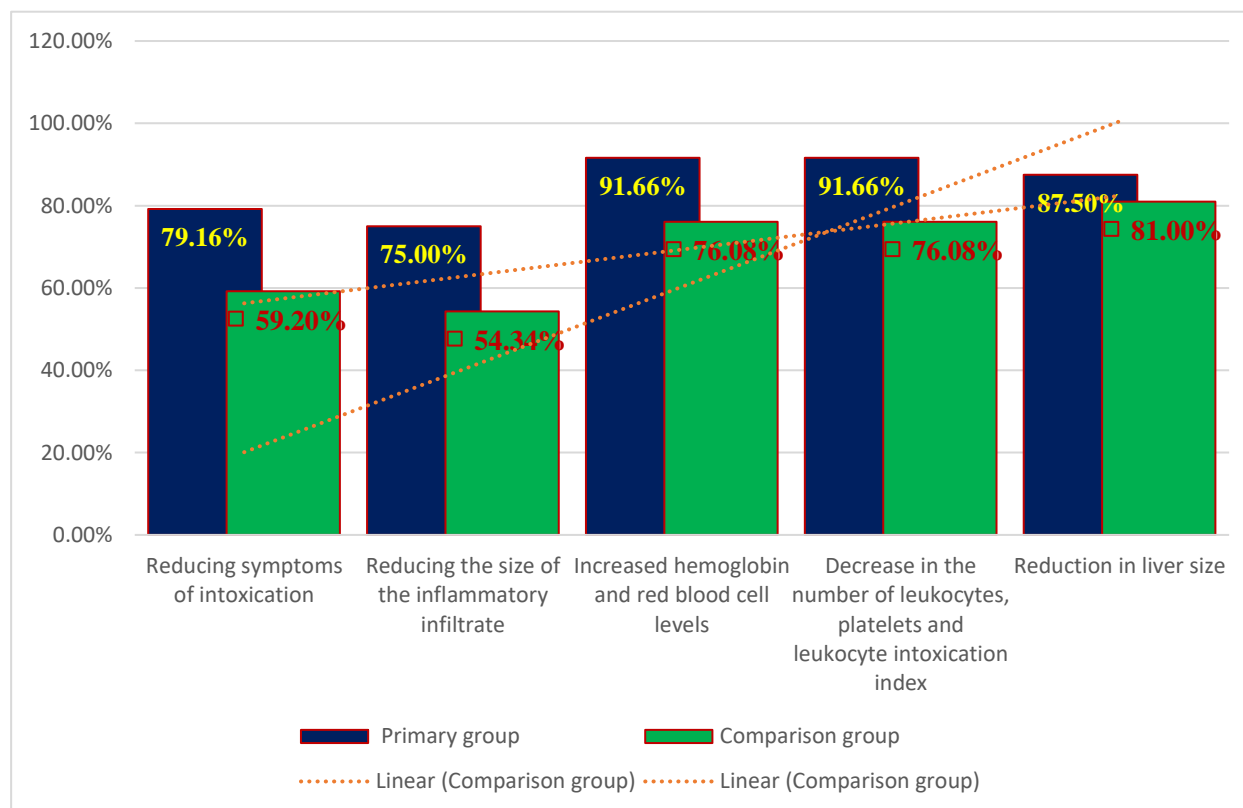
## RESULTS AND DISCUSSION

Data from control studies confirm the clinical effectiveness of the therapy in the main group of patients, where the drug Actovegin was used to correct

microcirculatory disorders of the liver and portal blood flow. The clinical effect of the drug was assessed according to several parameters, including the timing of resolution of intestinal paresis, reduction in the size of the inflammatory infiltrate of the abdominal cavity in acute pancreatitis, reduction in liver size, improvement in clinical and biochemical blood parameters, leukocyte index of intoxication and portal blood flow indicators.

In the main group of patients receiving complex therapy with Actovegin, there was a decrease in the manifestations of intoxication and elimination of intestinal paresis in 57 out of 72 patients (79.16%) already on the third day of using the drug. In the comparison group, where Pentoxifylline was used, the time for resolution of intestinal paresis was 5-7 days.

A reduction in the size of the inflammatory infiltrate of the abdominal cavity was observed within 7 days in 54 patients (75%) in the main group, while in the comparison group this effect was noted only in 25 patients (54.34%).



**Figure 1.** Comparison of treatment effectiveness of the main group and the comparison group

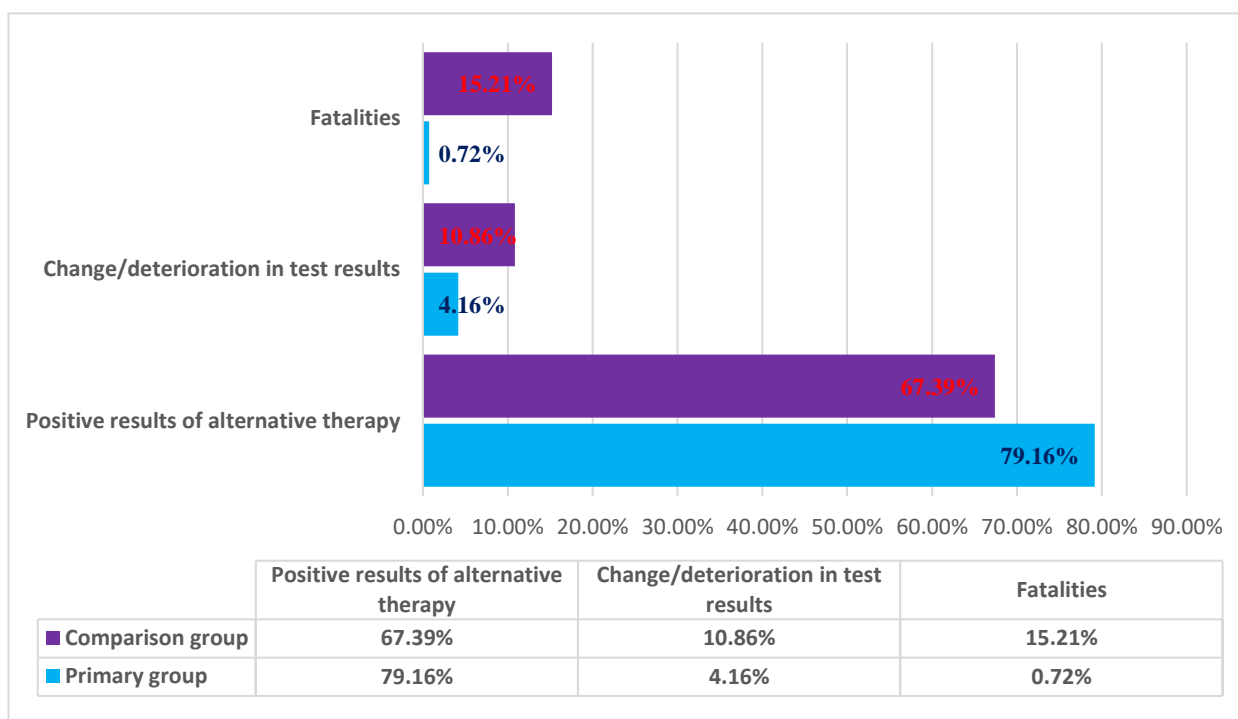


The results of clinical and biochemical blood tests indicate an increase in the level of hemoglobin and red blood cells, as well as a decrease in the number of leukocytes, the number of platelets and the leukocyte index of intoxication in 66 patients (91.66%) in the main group on the 12th day. In the comparison group, these indicators improved in 35 patients (76.08%). Detailed blood test data are presented in Table 2.

During therapy for 12 days, there was an improvement in hematological blood parameters, namely, a reduction in liver size in 63 (87.5%) patients from the main group, accompanied by a decrease in the level of enzymes ALT, AST, alkaline phosphatase, bilirubin and urea concentrations, as well as improvement in portal circulation indicators (see tables 2 and 3).

In the comparison group, among patients undergoing alternative therapy, positive results were achieved in 31 (67.39%) patients in a comparable time period. In 10 (21.73%) patients there was a slight change in the tests, while in 5 (10.86%) patients there was a deterioration in indicators.

Among the total number of observed 72 (100%) patients receiving Actovegin in the main group, in 3 patients (4.16%) the condition worsened as a result of progression of acute liver and multiple organ failure. On the 4th day after hospitalization, one patient died from intoxication. In the comparison group, where Pentoxifylline was used to correct microcirculatory processes, 7 (15.21%) patients died due to progressive mixed intoxication, the development of delirium and multiple organ failure



**Figure 2.** Comparison of indicators between the main group and the comparison group

In general, the results of the study confirm the higher effectiveness of the use of the drug Actovegin in the correction of microcirculatory disorders of the liver and portal blood flow compared to the alternative drug Pentoxifylline. The use of Actovegin promotes rapid resolution of intestinal paresis, reduction of inflammatory infiltrate of the abdominal

cavity, improvement of clinical blood parameters and liver function, as well as reduction of intoxication and improvement of portal blood flow.

However, it should be noted that in rare cases, the use of Actovegin may be accompanied by a deterioration in the condition of patients with acute liver and multiple organ



failure. Therefore, it is necessary to carefully evaluate the indications and contraindications for the use of the drug and monitor patients during treatment.

Further research may be aimed at a more detailed study of the mechanisms of action of Actovegin on liver microcirculation and portal blood flow, as well as a comparative analysis of its effectiveness with other drugs in the treatment of similar conditions.

## CONCLUSION.

In conclusion, the results of the studies confirm the effectiveness of the drug Actovegin in the complex treatment of patients with acute pancreatitis, suffering from pathology of the microvasculature and functional disorders of the affected liver. The mechanism of action of Actovegin, based on its endothelial protective properties, causes positive changes in the liver, including an increase in the speed of capillary blood flow and improvement of cellular and tissue metabolism.

With the help of Actovegin, stimulation of bioenergetic processes and hepatocyte regeneration is achieved, which leads to the restoration of liver function. This drug represents a promising means for improving the condition of patients with acute pancreatitis, especially in cases where there is an infectious pathology.

It is important to note that additional clinical studies are needed to more accurately determine the optimal dosage and regimen of Actovegin, as well as to analyze the long-term effects of its use and possible adverse reactions. Additional information will help you better understand the effectiveness and safety of the drug.

Overall, the use of Actovegin represents an important step in the development of treatment of acute pancreatitis and associated microcirculatory disorders of the liver. The use of this drug can significantly improve the treatment results and quality of life of patients who suffer from these conditions.

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