

POSSIBILITIES OF NUTRITIONAL MANAGEMENT FOR CORRECTION OF DISORDERS OF LIVER FUNCTIONAL CONDITION IN PATIENTS WITH ACUTE PANCREATITIS

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The results of the medical treatment of patients with destructive pancreatitis have been analyzed in Leningrad Region from 2003 to 2007. Results of study of liver biopsy materials have shown satellite reaction of liver. Treatment of patients with pancreatonecrosis made it main to assess not only main pathological process, but also changes in liver. The necessity of nutritional support to improve result of treatment of patients with destructive pancreatitis has been illustrated.

Keywords: *pancreatonecrosis, nutritional support*

В данной статье проанализированы результаты терапевтического лечения пациентов с деструктивным панкреатитом в Ленинградской области с 2003 по 2007 гг. Результаты исследования биоптата печени показали наличие сопутствующих заболеваний. Лечение пациентов с панкреонекрозом показывает, что необходимо выявлять не только основные патологические процессы в поджелудочной железе, но и изменения в печени. Продемонстрирована необходимость нутриционной поддержки, способствующей улучшению результатов лечения пациентов с деструктивным панкреатитом.

Ключевые слова: *панкреонекроз, нутриционная поддержка*

Introduction

Endogenous intoxication, caused by destructive disease of pancreatic gland (PG) in case of pancreatonecrosis, is frequent cause of death of patients with this disease [1,2,9]. Growing at 18-83,9% of functional liver failure in destructive forms of acute pancreatitis significantly exacerbated the severity of the disease and in 40-90% of cases leading to death of patients [4]. Evident structural and functional disorders of liver are of the essence in development and promotion of endogenous intoxication in patients with destructive pancreatitis (DP) [3,5]. The main cause of functional hepatic changes under acute pancreatitis is advancing deep microcirculatory disturbances, degenerate-dystrophic changes of hepatocytes and decompensation of the inner detoxication mechanisms. Recovery of morphological and functional state of liver is important problem of therapy of patients with DP. Its solution turns out to be possible in case of complex therapy, including nutritional management [6-8].

Study objective: to evaluate possibilities of nutritional management for correction of disorders of functional condition of liver in patients with destructive pancreatitis.

Material and methods

Information about 69 patients with DP, who had undergone treatment in several medical institutions of Leningrad Region from 2003 to 2007, was analyzed. Patients' mean age in case of DP did not exceed 49.1 years. Concomitant diseases were registered in 53.4% of cases. In most of cases of AP (86.2%), patients were admitted to hospital in terms, exceeding 24 hours from the beginning of the disease (table 1).

In all patients, signs of liver impairment were noticed.

Table 1

The distribution of patients with DP on length of hospitalization and severity of illness

Number of patients	Number of observations (%) OD patients hospitalized		
	up to 24 hours	after 24 hours	in total:
Small focal DP	11	37	48
Middle focal DP	10	5	15
Macrofocal DP	5	1	6
Total:	44	275	69

In the blood of patients on admission to the hospital investigated the activity of enzymes alanine and aspartate aminotransferase (ALT, AST), lactate dehydrogenase (LDH) as well as some of the lipid profile (triglycerides, total cholesterol), carbohydrate (glucose) and nitrogen (total protein, albumin, nitrogen urea and bilirubin).

In 36 (51,2%) patients there was a form of sterile pancreatic necrosis, 33 (49,8%) was found infected pancreatic necrosis. On the criterion of the prevalence of necrotizing process in the pancreas and various departments of retroperitoneal, abdominal, widespread pancreatic necrosis was diagnosed in 42 (59.1%) patients. Limited pancreatic necrosis was recorded in 27 (40.9%) patients. Hemorrhagic pancreatic necrosis was diagnosed in 28 (40%) patients, pancreatic necrosis of fat is established at 21 (30%), mixed form — 20 (30%). Hepatic impairment mild verified in 11 patients, average — 26 to severe — 32 patients.

Died 18 (26,9%) patients with pancreatic necrosis. The severity of the patients was determined pancreatogenic symptoms of intoxication, systemic inflammatory response, pancreatic, or infectious-toxic shock and multiorgan failure.

In all cases of DP, it was necessary to conduct surgical treatment of pathological changes in the area of PG more than two times. During operations, bioptic material was taken from liver; it was analyzed taking into account condition of patients and quality of conducted treatment.

Results

The clinical picture of hepatic failure in patients with acute pancreatitis showed symptoms of functional liver failure, the most characteristic of them, regardless of the etiology of the disease were jaundice (100%), pruritus (43.3%), hepatosplenomegaly (41.6%), hepatolenticular syndrome (65%).

Dysproteinemia, reduction of albumin concentration, disorders of blood coagulation system, increase of average weight molecules level were evidence of disturbance of functional condition of liver (table.2).

Table 2
The distribution of patients with PD frequency disturbances of liver function

Indicators of functional liver	Number of patients with DP (in%)
Reducing the number of total protein	22 (31,7)
Reduction in the albumin-globulin ratio	32 (46,7)
Violation protrombinsyntetic functions	29 (41,7)
Transient hyperglycemia	27 (38,9)
Increased activity of ALT	31 (44,4)
Increased activity of AST	16 (23,2)

Study of histological preparations showed that in none of observation, despite the severity of liver failure were not identified necrosis of hepatocytes. Morphological changes in liver in acute pancreatitis, manifested by different types of degenerative changes in hepatocytes, cholestasis, and inflammatory infiltration (Fig.1A,B). Violations of the functional state of liver morphology are associated with both degenerative changes of hepatic pa-

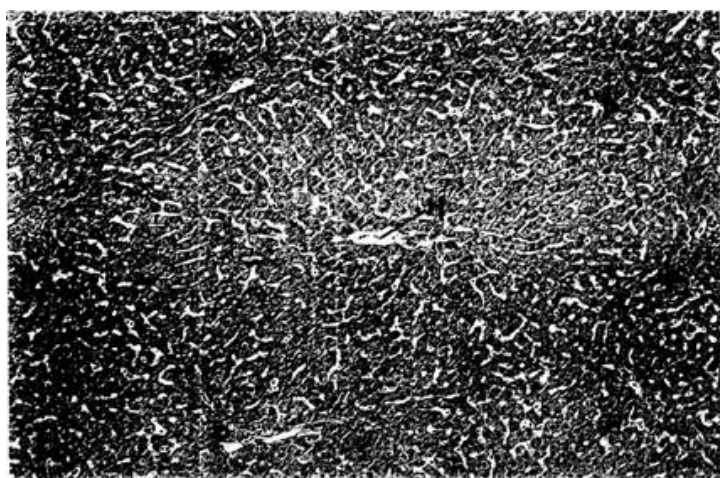
renchyma, and with the progressive loss of cellular elements of the parenchyma.

Complex study of liver biopsy materials, received during the 1st operation, conducted against a background of endogenous intoxication, indicated that in most of observations (57 from 69) satellite reaction of hepatic cells on destructive process in PG and changes in the organism of patient, connected with this process, in whole takes place. During histological study of biopsy materials, degenerative changes in hepatic cells were revealed. During biochemical study of liver tissue, rise of concentration of lipid peroxidation products, and reduction of antioxidative protection were noticed. Results of study of liver biopsy materials, received during repeated surgical treatment in the area of PG, have shown that in case of maintenance of existed destruction foci and formation of new ones, causing prolonged endogenous intoxication, satellite reaction of liver is being aggravated and noticed in all observations.

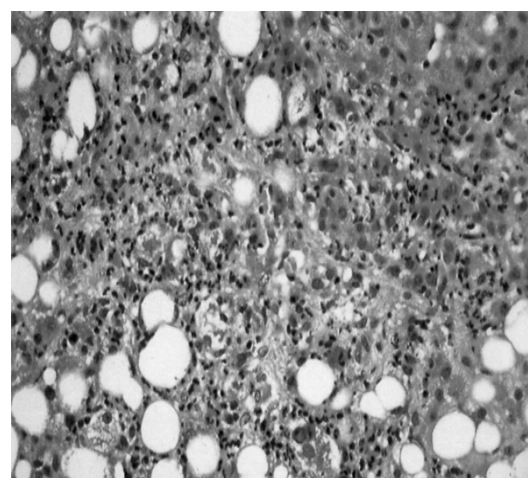
Study of liver biopsy materials, received during staging operations, conducted after preceding twofold surgical treatment of destructive process in PG, indicates, that in case of positive dynamics (cleansing of retroperitoneal space from necrotic masses and sequestra, evident regression of signs of endogenous intoxication, etc.) there are positive changes in morphological and functional condition of liver. It is remarkable, that in 26 from 36 observations, when such a positive dynamics was noticed, not only complex therapy using antioxidative and hepatoprotective agents, but also active nutritional both parenteral and enteral support was conducted besides surgical correction. In 33 observations, when stable clinical remission of DP was not revealed, and signs of liver morphological and functional disturbances persisted; systematic nutritional management was not conducted.

Conclusion

During treatment of patients with pancreatonecrosis, it is necessary to assess thoroughly not only main pathological process, but also changes in other organs and systems, particularly in liver.



A



B

Figure 1. Morphological structure of liver tissue in normal (A), with necrotizing pancreatitis (B)

With a view to prevention and treatment of liver failure with necrotizing pancreatitis is justified in holding early in the postoperative nutritional therapy, which optimizes the function of the liver and is one of the ways to prevent irreversible multiple organ disorders.

Application of optimal regimen of nutritional support allows improving result of treatment of patients with destructive pancreatitis, accompanied by endogenous intoxication, associated with satellite changes in the liver. While performing a nutritional therapy the it is necessary to recommend patients with acute pancreatitis to pay much attention to prophylaxis and treatment of hepatic insufficiency because it is the main reason that can lead to death.

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