Malnutrition in patients with chronic pancreatitis

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Introduction

In recent years, more attention is paid to trophological insufficiency syndrome (TI). Even in 1992 VM Luft proposed to introduce into medical practice, the term "trophological status" (TS), which allows complex and possibly fully describe the state of human nutrition as an indicator of their health and physical development.

Trophological status — a set of metabolic processes of the body caused by genotype, sex and age of a person providing adequate its operation in order to maintain homeostasis and wide adaptive reserves dependent on prior actual food and living conditions, as well as diseases [4].

According to the literature, TI varying severity (depending on the type and severity of the disease) in 28-31% of cases occur in chronic pancreatitis (CP), but in most cases it is subclinical [3].

Pathogenesis of TI

Development of TI is a logical consequence of the reduction of pancreatic function. The main functions of the pancreas include:

- neutralization of acidic chyme, coming the duodenum from stomach (bicarbonates);
- synthesis and secretion of digestive enzymes;
- production of hormones that regulate the exchange of carbohydrates (insulin, glucagon).

Primary exocrine pancreatic insufficiency syndrome is caused by a decrease in the mass of functioning of the exocrine pancreatic parenchyma resulting in atrophy and fibrosis, or violation of the outflow of pancreatic secretion in the duodenum due to an obstruction (blockage of the excretory ducts of the pancreas concrement, tumors, thick and viscous secret) [5]. This is typical of cystic fibrosis and the later stages of the CP (absolute primary pancreatic insufficiency) or,As a rule, for pathology major duodenal papilla (relative to the primary exocrine insufficiency).

Secondary mechanisms of exocrine pancreatic insufficiency include cases in which the duodenum enters a sufficient amount of pancreatic enzymes, which do

not take adequate participation in digestion due to insufficient activation, inactivation, violations of segregation. Eating disorders are caused primarily sitophobia (fear of eating because of pain).

Patients with biliary CP develops primary TI iatrogenic due to strict compliance with the recommended diet patients traditionally characterized by significant limitation fat ban raw vegetables and fruits. The imbalance of the traditional diet, lack of adequate nutritional support (NP) in these patients may lead to the development of severe HS.

In patients with alcoholic etiology of CP causes of TI are unbalanced diet, poor adherence to therapy. In this group, often running CP recorded cases of severe endocrine and exocrine pancreatic insufficiency. Power defective in these patients due to the low content of proteins, vitamins and minerals.

Development TI definitely affect the course of the underlying disease. With a decrease in TH synthesis of trypsin inhibitors, enzymes and zymogens, closing the circle of the pathogenesis of CP. The first inhibits the synthesis of trypsin inhibitors, which does not exclude intrapancreatic activation of enzymes and the attack of pancreatitis, even when the relative scarcity of intact pancreatic parenchyma. In severe TI sharply reduced secretion of pancreatic enzymes that contribute to the aggravation of malabsorption syndrome [6].

In patients with severe HS noted a significant decrease in the concentration of pancreatic enzymes in duodenal contents, feces and blood, correlated with a reduction in total protein and albumin levels. In these patients there was a significant reduction in the size of the prostate according to imaging techniques. It should be noted that this trend is observed in all clinical types of VT; the changes are more pronounced in marasmus. It is proved that the degree TH is correlated with the severity of malnutrition pancreatic endocrine system and the level of insulin secretion, and diabetes mellitus, acquired as a result of severe HS, it is irreversible [11].

Clinical variants of TI

Clinically, the syndrome of malnutrition expressed kwashiorkor, marasmus, and mixed form of marasmus and kwashiorkor [1]. Kwashiorkor — mainly protein deficiency that occurs with a deficit of visceral protein pool. Insanity — malnutrition, characterized by the depletion of the pool of somatic protein and fat stores in the body, a significant decrease in body weight. The most commonly encountered in clinical practice, intermediate state, including signs and marasmus and kwashiorkor.

Kwashiorkor occurs in patients with alcoholic CP, which make up the energy reserves of alcohol and calories due to social degradation neglected basic dietary recommendations. Insanity occurs during prolonged starvation on a background of exocrine pancreatic insufficiency is more common in pancreatic

cancer, painful forms of CP (Table. 1). The intermediate form of insanity-kvashiokor common in CP patients after surgery and at the terminal stages of the disease accompanied by severe exocrine pancreatic insufficiency.

Table 1

Clinical variants of malnutrition

Marasmus	**kwashiorkor**	**The combination of senility and kwashiorkor**
Body mass reduced	Body mass normal, may be increased	Body mass reduced
Exhaustion fat stores	Preservation fat stores	Exhaustion fat stores
Exhaustion somatic protein pool	Preservation somatic protein pool	Exhaustion somatic protein pool
Reduction visceral protein pool	Exhaustion visceral protein pool	Exhaustion visceral protein pool
Available immunodeficiency	Available immunodeficiency	Immunodeficiency

Diagnosis of TI. Determining severity

To establish the diagnosis and determine the severity of TI is recommended to carry out the TS assessment reflecting the weight and structure of the body, as well as the state of anabolic processes in the body. In routine practice, the most common anthropometric methods. They are easy to use, cost-effective and available to every doctor in the presence of tape measures, calipers and scales.

Laboratory methods of assessment allow TS to clarify the extent of TI and differentiate its view, first of all, to evaluate the security of a protein of the organism, the state of electrolyte and acid-base balance. Required laboratory methods include determination of the absolute lymphocyte count, total protein, albumin, glucose, cholesterol, potassium, sodium in the blood, urea and creatinine in the daily urine. The protein status of the organism depends on the state of the two major protein pools — physical (muscle protein) and visceral (blood proteins and internal organs). Evaluation of somatic protein pool is based on the definition of indicators somatometric. Laboratory methods of assessment allow us to estimate the vehicle mainly visceral protein pool, which is closely related to the state of the protein-synthesizing function of the liver, of the blood and immune system.

Currently, we developed new, more sensitive methods of assessing visceral protein pool. It has the greatest sensitivity and retinol transthyretin protein with half-lives of 2 days and 12 hours, respectively. The short period of the life of transthyretin and retinol-binding protein, the insignificance of their pool in the extravascular space and speed of synthesis in the liver can be recommended these

transport proteins for the early detection of protein deficiency [2 , 13].However, the use of these markers is economically costly and often carried out for scientific research purposes.

The most common indicators used to assess the vehicle are presented in Table. 2 [7 , 8].

Table 2

The most common indicators used to assess TS

Indicators	Norm	Trophological insufficiency		
		light	medium	severe
BMI, kg / m ^{2}				
18 -25 years	23.0 -18.5	18.5 -17.0	16.9 -15.0	<15.0
over 25 years	26.0 -19.0	19.0 -17.5	17.5 -15.5	<15.5
OP, see				
women	29.0 -26.0	26.0 -23.0	23.0 -20.0	<20.0
men	28.0 -25.0	25.0 -22.5	22.5 -19.5	<19.5
KZHST mm				
women	10.5 -9.5	9.5 -8.4	8.4 -7.4	<7.4
men	14.5 -13.0	13.0 -11.6	11.6 -10.1	<10.1
WMD, see				
women	25.7 -23.0	23.0 -20.4	20.4 -17.5	<17.5
men	23.0 -21.0	21.0 -18.5	18.5 -16.5	<16.5
Blood Albumin, g / l	≥ 35.0	35.0 -30.0	30.0 -25.0	<25.0
Transferrin, g / l	> 2.0	2.0 -1.8	1.8 -1.6	<1.6
Blood Lymphocytes, × 10 ^{9} / L	≥ 1,800	1,800 -1,500	1.500 -0.900	<0.900
Points	3	2	1	0
The amount of points	21	20 -14	13 -8	<7

Correction of TI

Currently, there was a lot of interest to the problem of correcting VT in patients with CP. Patients with CP shown no signs of TI compliance with dietary recommendations. In the treatment of exacerbations of CP or the development of reactive pancreatitis diet used with mechanical, chemical sparing. If you have diarrhea, steatorrhea due to limited amount of fat in the diet, in violation of exocrine pancreatic function limited to simple carbohydrates.

In the presence of exocrine pancreatic insufficiency in patients receiving modern shows polyenzyme drugs in the initial dose (Creon 20-25,000 Lipase units per meal) [11]. In the case of TI mild to moderate severity advisable to appoint a sufficient dose of multienzyme preparations (Creon 20-40,000 Lipase units per meal). In case of severe CP Creon dose increase to 40-60,000. Lipase units per meal allows you to completely stabilize the vehicle [1].

During exacerbations, when the patient is not able to fully digest the food ration, one or more meals is recommended to be replaced by a specialized nutrient blend. Such patients it is advisable in the first phase appointment polysubstrate

chyme-like nutrient mixture (nutrihim-2, Russia), pre-hydrolyzed enzyme preparations.

In remission be preferred nutrient mixtures containing medium chain triglycerides, fatty acids, and mixtures thereof reduced to 5-11 g / l fat (4.5-9.0% of total calories) (peptamen, nutrizon, nutrien standard, nutrien elemental, nutrikomp liquid standard). The application allows you to correct the nutrient mixtures restrictive diet on the content of vitamins, minerals. The amount of the nutrient mixture is calculated individually depending on the severity of TI.

Special group are patients who have a combination of several diseases. In the case of a patient of diabetes in the selection of the nutrient mixture should pay attention to the composition of the carbohydrate component (no lactose, limit simple carbohydrates).

For this purpose, it is recommended to use a half-elemental mixture standard mixture or type "diabetes" Nutrizon advanced diazonium, nutrien diabetes, nutrikomp liquid, mixtures of the following nutrients are presented in Russian. As nutrition patients with CP and diabetes can be recommended to intake glyutserrn SR (1-2 sachets per day, or instead of one meal).

In the case of a combination of CP and cirrhosis expedient appointment of nutrient mixtures such as "hepatitis". The purpose of such compounds contributes to compensate the protein and energy needs of the organism, the prevention and treatment of hepatic encephalopathy. Good efficacy demonstrated mixture nutrikomp hepa liquid, nutrien hepa [9].

In case of violation of the chair, the development of the syndrome of bacterial overgrowth is expedient appointment of nutrient mixtures containing soluble dietary fiber. The following nutrient mixtures containing dietary fiber are presented in Russian: nutrizon with dietary fiber, nutrizon energy with dietary fiber, nutrikomp fiber liquid. Characteristics and main effects of dietary fibers are shown in Table 3.

Table 3

Characteristics and main effects of dietary fiber

Dietary fiber	
insoluble	**dissolvable**
Representatives: lignin, cellulose, resistant starch, soy polysaccharide	Representatives: inulin, oligofructose, pectin, gum arabic
not viscous	Viscous
It creates a mass in the intestine	It creates mass in the intestine
Poor fermented or not fermented by intestinal microflora	Well fermented by intestinal microflora
effects	
• Accelerates transit content colon and increases the mass faeces • Decreases absorption cholesterol • It is sorbent toxins	• It slows transit chyme and removals carbohydrates • has antidiarrheal effect • Increases calcium absorption • It has bifida about — and lactogenic

	Effect • Improves mucous trophism

Forecast

All patients with TI, characterized by an increased risk of morbidity and postoperative complications in CP. More than a poor prognosis in patients with CP is marked with the presence of secondary immunodeficiency. In acute pancreatitis with the development of interstitial edematous changes of the pancreas and the systemic inflammatory response observed a significant decrease in the level of albumin, transthyretin (prealbumin) and serum transferrin (hypoproteinemia consumption hypermetabolism) [12]. The risk of local complications of CP and its prognosis correlate with the degree of severity of TI.

In the complex treatment of VT, properly phased and ongoing nutritional support marked increase in the size of the prostate, with the related increase in the volume of secretion and body mass index. This is indicative of the relative reversibility of changes in those cases where there is no fibrosis and calcification of the pancreas. In case of apparent structural changes of the pancreas caused by CP, the restoration of its functions may not occur. Even with the complete disappearance of clinical and laboratory signs of TI against adequate nutritional support and therapy of enzyme exocrine pancreatic insufficiency can not change [6].

Conclusion

Correction VT is a relatively new trend in the treatment of CP. For this purpose, a plurality of feeds is designed for enteral administration and for oral consumption. Using polyenzyme drugs in conjunction with the appointment of sipingovyh nutrient blends will not only quickly corrected TI, but also positively influence the course of the underlying disease, prevent complications and improve the quality of life of patients.

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The lecture contains current data on prevalence of malnutrition among patients with chronic pancreatitis. We discuss the main pathogenetic mechanisms, clinical variants, diagnostic approaches and treatment methods of malnutrition.