



## CHANGES IN HEMOSTASIS SYSTEM IN CHRONIC PANCREATITIS

Boltaev K. J.<sup>1</sup>,

Yuldashev O. M.<sup>2</sup>

<sup>1</sup> Department of Hematology and Clinical Laboratory Diagnostics

<sup>2</sup> Doctoral Students in the Field of Hematology Bukhara

State Medical Institute, Bukhara, Uzbekistan

### Annotation

Currently, chronic pancreatitis (CP) is an urgent global medical and social health problem due to a progressive increase in morbidity, high mortality, disability of people of working age, the development of cancer against the backdrop of a chronic process, and a decrease in the quality of life. A 20-year history increases the risk of developing pancreatic cancer by 5 times, while the survival rate is no more than 3-4% within 5 years. Therefore, CP remains one of the most urgent problems of modern gastroenterology.

**Keywords:** chronic pancreatitis, hemostasis, pancreas, inflammation

## ИЗМЕНЕНИЯ В СИСТЕМЕ ГЕМОСТАЗА ПРИ ХРОНИЧЕСКОМ ПАНКРЕАТИТЕ

Болтаев К.Ж.<sup>1</sup>,

Юлдашев О.М.<sup>2</sup>

<sup>1</sup> Кафедра гематологии и клинической лабораторной диагностики

<sup>2</sup> Базовый докторанта в области гематологии

Бухарский государственный медицинский институт,  
Бухара, Узбекистан

### Аннотация

В настоящее время хронический панкреатит (ХП) представляет актуальную общемировую медико-социальную проблему здравоохранения вследствие прогрессирующего роста заболеваемости, высокой смертности, инвалидизации лиц трудоспособного возраста, развития рака на фоне хронического процесса, снижения качества жизни. Двадцатилетний анамнез повышает риск развития рака поджелудочной железы (ПЖ) в 5 раз, выживаемость при этом составляет не более 3-4% в течение 5 лет. Поэтому ХП остается одной из самых актуальных проблем современной гастроэнтерологии.



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**Keywords:** хронический панкреатит, гемостаз, поджелудочная железа, воспаление

## **SURUNKALI PANKREATITDA GEMOSTAZ TIZIMI UZGARISHI**

Boltayev K.J.<sup>1</sup>,

Yuldashev O.M.<sup>2</sup>

<sup>1</sup> Gematologiya va klinik laboratoriya diagnostikasi kafedrasi

<sup>2</sup> Gematologiya yo'nalishi bo'yicha doktorant

Buxoro davlat tibbiyot instituti,

Buxoro, O'zbekiston

### **Annotatsiya**

Hozirgi vaqtida surunkali pankreatit (SP) kasallanishning tobora ortib borishi, yuqori o'lim darajasi, mehnatga layoqatli yoshdagi odamlarning nogironligi, surunkali jarayon fonida saraton rivojlanishi va kasallikning hayot sifatini kamayishi tufayli global tibbiy va ijtimoiy salomatlik muammosi hisoblanadi. 20 yillik tarix oshqozon osti bezi saratoni rivojlanish xavfini 5 baravar oshiradi, 5 yil ichida omon qolish darajasi 3-4% dan oshmaydi. Shu sababli, SP zamonaviy gastroenterologiyaning eng dolzarb muammolaridan biri bo'lib qolmoqda.

**Kalit so'zlar:** surunkali pankreatit, gemostaz, oshqozon osti bezi, yallig'lanish

In the last decade, the prevalence of chronic pancreatitis (CP) among adults has reached 27-50 cases per 100,000 population. This disease has a pronounced socio-economic character, as it affects the most productive layer of the adult population at the age of 35-60 years, and the average age of patients has decreased from 50 to 39 years. The main clinical manifestation of CP is pain syndrome, which leads to disability of the patient in the physical and labor sphere [2,4,6].

The main types of surgical treatment for capitate CP in recent years is considered to be resection of the pancreatic head (RGGOK) [1,3]. Previously, pancreatoduodenal resection (PDR) was used and was considered as the operation of choice. However, the increased technical complexity of this operation with gross anatomical changes in the pancreas and adjacent organs makes PDR technically difficult to perform. Later CBFrey, W. Warren, JR Izbicki, T. Imaizumi, H. Yasuda, E.I. Galperin proposed their own ways of RPW. The advantage of PH is the preservation of the duodenum (DDC) and minimal damage to the nervous apparatus of the pancreatoduodenal region, which provides digestive function and a full life for patients. The prevalence of CP in





Europe, the USA, Japan is 23-50 cases, in Russia - 27.4-50 cases per 100 thousand population [5,7]. Over the past 30 years, there has been a global trend towards an increase in the incidence of acute and chronic pancreatitis by more than 2 times [4,8], in Russia by more than 3 times [2]. Moreover, the average age since diagnosis has decreased from 50 to 39 years [12]. The annual incidence of CP in developed countries ranges from 5 to 12 cases per 100,000 population [10, 14]. The advantage of PH is the preservation of the duodenum (DDC) and minimal damage to the nervous apparatus of the pancreatoduodenal region, which provides digestive function and a full life for patients. The prevalence of CP in Europe, the USA, Japan is 23-50 cases, in Russia - 27.4-50 cases per 100 thousand population [13, 14]. Over the past 30 years, there has been a global trend towards an increase in the incidence of acute and chronic pancreatitis by more than 2 times, in Russia by more than 3 times [2]. Moreover, the average age since diagnosis has decreased from 50 to 39 years [12]. The annual incidence of CP in developed countries ranges from 5 to 12 cases per 100,000 population [8, 10]. The advantage of PH is the preservation of the duodenum (DDC) and minimal damage to the nervous apparatus of the pancreatoduodenal region, which provides digestive function and a full life for patients. The prevalence of CP in Europe, the USA, Japan is 23-50 cases, in Russia - 27.4-50 cases per 100 thousand population [3, 4, 8]. Over the past 30 years, there has been a global trend towards an increase in the incidence of acute and chronic pancreatitis by more than 2 times [5,9], in Russia by more than 3 times [2]. Moreover, the average age since diagnosis has decreased from 50 to 39 years. The annual incidence of CP in developed countries ranges from 5 to 12 cases per 100,000 population.

In 30-60% of cases, CP patients develop early and late complications [124]. Mortality after the initial diagnosis of CP is up to 20% during the first 10 years and more than 50% after 20 years (average 11.9%) [3]. In 15-20% of cases, patients die from complications that occur during exacerbations of pancreatitis, others - due to secondary digestive disorders and infectious complications [1,6,9].

HP is a precancerous disease. At the same time, the analysis of modern literature shows that many issues of pathology are still far from being resolved. Thus, there is no level I evidence base for the diagnosis and treatment of CP [12]. There are no clear diagnostic algorithms for exacerbation of CP, effective approaches to treatment have not been developed due to the insufficiently studied pathogenesis of the disease. It is known that one of the pathogenetic processes leading to the development and progression of CP is oxidative stress [11]. Numerous studies have shown that CP increases the level of lipid peroxidation products (LPO) in the blood and pancreatic tissue. And if the state of lipid peroxidation processes during exacerbations of CP are



studied in sufficient detail, then the works on the determination of the antioxidant status in CP are few, the data obtained in them are contradictory. A comprehensive study of the hemostasis system, which is one of the most powerful antioxidant systems, has not previously been carried out in CP separately in plasma and erythrocytes. At the same time, this is important, since the patterns of violation of the redox status in pancreocytes proceed similarly to changes in erythrocytes, and an increase in the parameters of the hemostasis system in the blood plasma can mark the cytolysis of pancreatic cells [10].

In this regard, the study of the hemostasis system separately in plasma and erythrocytes in CP is of undoubted theoretical and practical interest. On the one hand, these studies will clarify the possible aspects of the pathogenesis of CP with further access to pathogenetically substantiated treatment, on the other hand, they may be important in diagnosing exacerbations of the disease.

## Purpose of the Study

To study the indicators of coagulation and cellular hemostasis in patients with chronic pancreatitis, depending on the degree of activity of the inflammatory process of this pathology.

## Material and Research Methods

A prospective and retrospective comparative study was carried out. The study included 60 patients with CP receiving treatment in the Bukhara regional hospital in the department of gastroenterology.

In the hemostasis laboratory of the Bukhara Regional Multidisciplinary Medical Center, a hemostasiological examination of patients was carried out, which included an assessment of the following links in this system: Coagulation hemostasis - PT, PTI, APTT, INR, Fibrinogen using a coagulometer; Vascular-platelet hemostasis - PLT, PCT, MPV, PDW using a hematological analyzer;

To study the indicators of hemostasis, our study was carried out on a single-channel coagulometer (HumaClot Junior).

Statistical processing was carried out on a TOSHIBA personal computer using the Microsoft Office Excel - 2008 software package, including the use of built-in statistical processing functions. The methods of traditional variational parametric and nonparametric statistics were used with the calculation of the arithmetic mean of the studied indicator (M), the standard error of the mean (m), relative values (frequency, %), the statistical significance of the measurements obtained when comparing the average values was determined by Student's t test (t) with the calculation error



probability (p). Significance level  $p<0.05$  was taken as statistically significant changes.

Among the clinical manifestations of exacerbation of CP, the leading complaint in all patients was abdominal pain. Of the dyspeptic symptoms, patients often noted nausea (67%), loss of appetite (48%), belching (18%), heartburn (15%), and vomiting that did not bring relief (6.7%). The syndrome of exocrine insufficiency was manifested by flatulence and rumbling in the abdomen (48%), loose stools with a predominance of mushy feces (49.4%), and weight loss (8.9%). When analyzing the intensity of the pain syndrome, assessed on a ten-point analog scale (Bonica JJ, 1990), it was found that pain expressed at 8-9 points was observed mainly in patients with an increase in the size of the pancreatic head and with a complicated form of the disease. This is explained by the main mechanisms of abdominal pain in CP, which include ductal hypertension in the pancreas, inflammation of its parenchyma, perineural infiltration (Kostyukovich O.I., 2009; Sebastiano DP, 2004). When analyzing the generally accepted laboratory indicators of exacerbation of CP (Table 1), it turned out that the level of amylase, the number of leukocytes and the values of ESR in the general group of patients and GCS did not differ significantly and were recorded within the reference values, the level of serum elastase-1 was 78% higher in the general group of patients compared with GCS, however, its level also did not exceed normal values. It should be noted that the diagnostic significance of the studied parameters increased in parallel with the increase in the intensity of pain ishdrome. Thus, in the group of patients with CP with mild and moderate pain ( $n=54$ ), the analyzed parameters did not differ from those in the GCS. In the group of patients ( $n=36$ ) with intense pain of 6-9 points, a significant increase in ESR by 50% was determined, blood amylase - by 8% and serum elastase-1 - by 119% compared with GCS. Next, we analyzed the laboratory parameters of exacerbation of CP in the group of patients with intense pain syndrome, depending on the morphological signs of the disease. In the interstitial edematous form ( $n=12$ ), a high sensitivity of exacerbation indicators was determined: the number of leukocytes was increased by 78%, ESR - by 130%, blood amylase activity - by 115%, serum elastase-1 - by 159% compared with GCS. In the group of patients with complicated course of CP (cystic, pseudotumorous, calcific forms of CP with the development of pancreatic hypertension, cholestasis, pancreatogenic diabetes mellitus) ( $= 12$ ), the number of leukocytes was increased by 42.8%, ESR - by 112% and serum elastase activity - 1 - by 121%. In the parenchymal form of CP ( $n=16$ ), an increase in ESR by 16% and elastase-1 activity by 100% was determined. The sensitivity of blood amylase remained low regardless of the intensity of the pain syndrome in parenchymal and complicated forms of the disease.



## Conclusions:

There is a high level of activity of coagulation hemostasis, depending on the severity of the activity of the inflammatory process in CP. Indicators of vascular-platelet hemostasis have a high degree of activity in positive dependence on the severity of the inflammatory process in CP. Indicators of coagulation and vascular-platelet hemostasis are highly active depending on the duration and age of patients with CP.

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