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FEATURES OF COLONIZATION BY THE MICROFLORA OF THE ORAL CAVITY AND INTESTINES IN THE FIRST DAYS OF BIRTH IN PREMATURE INFANTS

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2 groups of newborns were examined: the 1st (main) group included 20 newborns (15 boys, 5 girls) with an average gestational age of 30 weeks (range 25–36 weeks) and an average birth weight of 1125 g (range 560–1500 g). The 2nd (control) group included 20 healthy newborn infants (15 boys, 5 girls). In the main group, 9 infants received mother's milk, 3 artificial formula, 8 infants received parenteral nutrition; in the control group: 15 received mother's milk, 5 infants received artificial mixture. A classical bacteriological study was performed. In the microbiocenosis of the oral cavity of children born to women with intestinal and vaginal eubiosis, by the end of the first week, representatives of the resident flora were the predominant microflora: lactobacilli (100.0 %, lg 4.6±0.6 CFU/ sub unit.), bifidobacteria (75.0 %; lg 2.7±0.3 CFU/sub unit.), non-pathogenic streptococci: S.mitis (50.0 %, lg3.5±0.5 CFU/sub unit), S.salivarius (75.0 %; lg 3.2±0.2 CFU/sub unit), S.sangvis (59.7 %; lg 2.4±0.6 CFU/sub unit); coagulase-negative staphylococci: S.epidermidis (75.0 %; lg 3.4±0.6 CFU/unit sub.). Representatives of the transient microflora were found in a small percentage of observations and their contamination was insignificant: S.mutans (12.1 %; lg 2.2±0.2 CFU/sub unit), S.aureus (25.0 %; lg 2.2±0.8 CFU/sub unit), Klebsiellae (9.7 %; lg 1.4±0.4 CFU/unit.sub.), Escherichia (4.8 %; lg1.1±0.3 CFU/sub unit), fungi of the genus Candida (12.1 %; lg 2.2±0.8 CFU/ sub unit).

As a result of the study, it was found that the flora of the throat and feces of premature infants at birth were predominantly gram-negative bacilli, easily installed in the faeces, and to a lesser extent in the throat.

Key words: premature newborns, microflora of the oral cavity and intestines

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ОСОБЛИВОСТІ ЗАСЕЛЕННЯ МІКРОФЛОРОЮ ПОРОЖНИНИ РОТА І КИШКІВНИКА В ПЕРШІ ДНІ НАРОДЖЕННЯ У НЕДОНОШЕНИХ ДІТЕЙ

Було обстежено 2 групи новонароджених: до 1-ї (основної) групи увійшли 20 новонароджених (15 хлопчиків, 5 дівчаток) із середнім терміном вагітності 30 тижнів (діапазон 25–36 тижнів) та середньою вагою при народженні 1125 г (діапазон 560–1500 г). До 2-ї (контрольної) групи увійшли 20 здорових новонароджених (15 хлопчиків, 5 дівчаток). В основній групі 9 немовлят отримували материнське молоко, 3 – штучну суміш, 8 немовлят отримували парентеральне харчування; у контрольній групі 15 отримували материнське молоко, 5 немовлят отримували штучну суміш. Проведено класичне бактеріологічне дослідження. У мікробіоценозі ротової порожнини дітей, народжених від жінок з кишковим і вагінальним еубіозом, до кінця першого тижня переважною мікрофлорою були представники резидентної флори: лактобацили (100,0 %, lg 4,6±0,6 КУО/од.), біфідобактерії (75,0 %, lg 2,7±0,3 КУО/од.), непатогенні стрептококи: S.mitis (50,0 %; lg3,5±0,5 КУО/од.), S.salivarius (75,0 %; lg 3,2±0,2 КУО/од.), S.sangvis (59,7 %; lg 2,4±0,6 КУО/од.); коагулазонегативні стафілококи: S.epidermidis (75,0 %; lg 3,4±0,6 КУО/од. суб.). Представники транзиторної мікрофлори були виявлені в невеликому відсотку спостережень, і їхня контамінація була незначною: S.mutans (12,1 %; lg 2,2±0,2 КУО/од.), S.aureus (25,0 %; lg 2,2±0,8 КУО/од.), клебсієли (9,7 %; lg 1,4±0,4 КУО/суб. од.), ешерихії (4,8 %; lg 1,1±0,3 КУО/суб. од.), гриби роду Candida (12,1 %, lg 2,2±0,8 КУО/суб. од.). В результаті дослідження було встановлено, що флора горла та калу недоношених дітей при народженні складалася переважно з грамнегативних бацил, легко вони потрапляли в кал та меншою мірою в горло.

Ключові слова: недоношені новонароджені, мікрофлора порожнини рота та кишечника.

The microflora of the oral cavity consists of 30 strains and represents the most complex form of biocenosis, in which aerobes, facultative and obligate anaerobes constantly coexist, represented by numerous and diverse species of gram-positive and gram-negative bacteria [12, 15]. The primary process of digesting food and assimilating vitamins and nutrients takes place in the mouth. The gut microbiome influences the development of the immune system and can play an important role in protecting against bacteria and/or their toxins[1, 4].

In the structure of mortality, infections specific to the perinatal period, bacterial sepsis of newborns and congenital pneumonia account for 23.5 % and occupy the first rank [8, 10].

In full-term children, the development of the microflora of the gastrointestinal tract has been sufficiently studied and there is consensus among clinicians on these issues.Usually, the gastrointestinal tract is sterile during intrauterine life, colonized within 24 hours after birth. The predominant microflora strains fluctuate during the first 2–3 weeks of life and stabilize in accordance with the diet, usually by the age of 1 month of the child. From this age, anaerobic bacteria begin to colonize the baby's intestines, including pathogens that cause inflammatory processes. Bacterial colonization of an infant's mouth and colon depends on many factors, including gestational age, method of delivery, diet, environment, and exposure to antibiotics. In premature infants, humoral and cellular immunity and other protective factors are insufficiently formed ; delayed and often inadequate colonization of microflora is observed, which leads

to increased inflammatory reactions. Intestinal bacteria can predispose to necrotizing enterocolitis or protect against it, a severe disease associated with prematurity [11]. According to the literature, the cause of NEC is mainly prematurity; at the same time, due to the incomplete full development of the intestine, artificial feeding contributes to a violation of the composition of the microflora and together they cause an inflammatory reaction in the wall of the immature intestine. According to the results of experimental studies, bacteria were assigned a decisive role in the pathogenesis of NEC [1]. The incidence of NEC in newborns with very low birth weight ranges from 3 % to 15 %, while the high mortality rate ranges from 15 % to 30 % [3]. Studies comparing the microbiota of premature newborns who developed NEC compared with control group newborns have shown that NEC leads to unusual types of intestinal microbes and an overall decrease in microbiota diversity.

Infants who developed necrotizing enterocolitis had an increased proportion of Gammaproteobacteria (p=0.0011) and a lower proportion of both Negativicutes (p=0.0013) and the combined Clostridia-Negativicutes class (p=0.0051) compared to controls. These associations were strongest in both the primary cohort and the general cohort of infants born at less than 27 weeks of gestation.M.A.Makarova, et al. (2017) found that 6 % of children with intestinal dysbiosis are carriers of enteroaggregative E.coli. [6].

According to Malygin et al., a bacteriological study of the microbiota of the colon in premature infants revealed a pronounced deficiency of obligate microflora; facultative anaerobic microorganisms prevailed in the intestinal microbiocenosis. The isolation of anaerobic representatives in the early neonatal period was at a low level, represented only by bacteroids (3.4 %; 4.5 lg CFU/g). Consequently, the microbiota of the colon in premature infants with very low body weight (VLBW) and extremely low body weight (ELBW) it is characterized by a sharp deficiency of obligate representatives (lactobacilli and functionally significant E.coli) [7]. In the literature available to us, it was not possible to find a source reflecting the state of the microflora of the oral cavity compared with the microflora of the large intestine in premature newborns. In this aspect, the study of the composition of the microflora of the oral cavity and colonizing the large intestine in premature newborns is of particular importance.

The purpose of the study was to investigate the features of the microflora of the oral cavity and colonizing gastrointestinal tract in premature infants compared with full–term newborns.

Material and methods. 20 newborns (15 boys, 5 girls) with an average gestational age of 30 weeks (range 25–36 weeks) and an average birth weight of 1125 g (range 560–1500 g). The second (control) group included 20 healthy newborn infants (15 boys, 5 girls). In the main group, 9 infants received mother's milk, 3 artificial formula, 8 infants received parenteral nutrition; in the control group: 15 newborns received mother's milk and 5 infants received artificial formula. A classical bacteriological study was performed; samples were taken within 8 hours after the birth of infants and once in the next 4 days. All samples were processed within 1 hour after collection.Faecal smears were prepared and fixed for subsequent Gram staining (Kopelov modification).

The results of light microscopy of all smears were compared with the results of seeding to verify the adequacy of nutrient media and incubation methods. All samples were seeded on horse blood agar (HBA; Columbia Agar Base, Oxoid), MacConkey agar (Oxoid) and mannitol salt agar (Oxoid) and incubated under aerobic conditions at 370 C.

Real-time PCR techniques and high-performance sequencing (the Illumina platform) were used to determine serotypes. The species identification of microorganisms was carried out by MALDI-TOF-MS analysis. To quantify changes in the state of the microflora, an eubiotic index was used, reflecting the ratio of the number of positive states of the microbiota to the number of negative ones. When processing the data, the programs SeroBA, PneumoCaT and the software capabilities of the PubMLST org Internet resource were used.

The number of microbes of each species in 1 g of the clinical sample was determined by the number of colonies grown on differential diagnostic nutrient media, calculated per unit of seed material. The isolated pure cultures were identified by morphological, tinctorial, cultural and biochemical properties according to the determinant of Bergey (1997).

The isolated pure cultures of microorganisms were tested for the presence of pathogenicity factors (plasmocoagulase, lecithovetillase, hyaluronidase, hemolysin, DNA and RNA nucleases), persistent properties (lysozyme, antilysocyme, antiinterferon activity) and sensitivity to 20 antibiotics by standard discs. The qualitative presence and quantitative severity of the sign of anti-lysozyme activity of microorganisms were determined by the method of O.V. Bukharin et al. (2000).

Cluster analysis and graphical representation of similarity coefficient matrices were performed using the TreeCon for Windows v.1.3b program. The grouping of strains and the construction of dendrograms were carried out using the unweighted pair-group method UPGMA.

Throat swabs have not been cultured for anaerobic bacteria because other studies have shown that oral anaerobes are rare before the eruption of temporary teeth. During sowing, the cups were kept under a stream of high-purity carbon dioxide (Carba, Melbourne, Australia) to maintain a reduced state.

All crops were carried out in a standardized way. The aerobic tablets were examined after 24 and 48 hours. Anaerobic cups were incubated in anaerobic vessels. All patients signed an informed consent to participate in the study. The work was carried out in accordance with the standards of good clinical practice and the principles of the Helsinki Declaration. The study was approved by the local Ethics Committee of the K. Faradzheva Research Institute of Pediatrics (Protocol No. 01–9 dated 01/22/2021).

For statistical processing of the obtained results, the 21st version (IBM Corp., Armonk, USA) of the IBM SPSS Statistical for Windows software package was used. Nonparametric Mann-Whitney and Kolmogorov-Smirnov criteria were used (with the Lilliefors correction). The methods of variational statistics, the Shapiro-Wilk criterion, the Student's t-criterion, the Mann-Whitney, Friedman criterion and the Wilcoxon paired criterion are applied. The Pearson (r) and Spearman (R) coefficients are calculated. The Kaplan-Mayer method was used to assess survival. The values were assumed to be reliable at $p<0.05$.

Results of the study and their discussion. In the microbiocenosis of the oral cavity of children born to women with intestinal and vaginal eubiosis, by the end of the first week, representatives of the resident flora were the predominant microflora: lactobacilli (100.0 %, lg 4.6±0.6 CFU/ sub unit.), bifidobacteria (75.0 %; lg 2.7±0.3 CFU/sub unit.), non-pathogenic streptococci: S.mitis (50.0 %, lg3.5±0.5 CFU/sub unit), S.salivarius (75.0 %; lg 3.2±0.2 CFU/sub unit), S.sangvis (59.7 %; lg 2.4±0.6 CFU/sub unit); coagulase-negative staphylococci: S.epidermidis (75.0 %; lg 3.4±0.6 CFU/unit sub.). Representatives of the transient microflora were found in a small percentage of observations and their contamination was insignificant: S.mutans (12.1 %; lg 2.2±0.2 CFU/sub unit), S.aureus (25.0 %; lg 2.2±0.8 CFU/sub unit), Klebsiellae (9.7 %; lg 1.4±0.4 CFU/unit.sub.), Escherichia (4.8 %; lg1.1±0.3 CFU/unit.sub.), fungi of the genus Candida (12.1 %; lg 2.2±0.8 CFU/ unit.sub.).

The microbiota of the oral cavity of infants born to women with impaired microbial ecology of the vagina and intestines (groups 2 and 3) differed from that in the comparison group with a significantly lower content of resident and a greater representation of opportunistic species.

In healthy full-term newborns, intestinal microbiocenosis was dysbiotic from the first week of life, due to the high specific gravity of opportunistic microorganisms such as klebsiella, staphylococcus, citrobacter, proteus and enterobacter in 43.6 % (51) of children, and low content of lacto- and bifidobacteria (lg 3–4 and lg 4–5 CFU/d, respectively).

E.coli had reduced enzymatic activity in half of the cases. When assessing the relationship between the microbial status of various biotopes in the examined children, the following results were obtained: violation of the intestinal microbial balance directly correlates with violations of the microecology of the oral cavity ($g=0.78$; $p<0.05$).

In premature infants, among the various variants of associations, combinations of E. coli (hemolytic strains or with altered enzymatic properties) with fungi of the genus Candida and Staphylococcus aureus had the highest proportion (36.6 %). Less often, in 26.6 % of cases, the combined presence of hemolytic Escherichia, Klebsiella, fungi of the genus Candida and coagulase-negative staphylococci was noted. The peculiarities of the formation of intestinal microflora in them is a prolonged phase of increasing infection, which is characterized by excessive growth of enterobacteria, staphylococci, klebsiella, yeast-like fungi of the genus Candida, which have long occupied a dominant position in the biocenosis of the digestive tract of children, the phase of stabilization of microflora by the end of the first week of life in such children is noted only in isolated cases.

The results of bacteriological studies obtained from the throat in both groups are shown in Table 1.

Table 1

Aerobic bacterial flora of the throat in the examined children

Microflora	Detectability on day 4 in %	
	Underweight	Full-term
It did not give any growth	35 (n=7)	85 (n=17)
Viridans streptococci	15 (n=3)	0
Strp.pneumonie	10 (n=2)	0
Streptococcus (A group)	0	0
Streptococcus (D group)	0	0
Staph/epidermidis	10 (n=2)	5 (n=1)
Staph. aureus	0	0
Lactobacillus spp.	0	0
E.Coli	10 (n=2)	5 (n=1)
Klebsilla spp.	5 (n=1)	0
Pseudomonas spp.	5 (n=1)	0
Enterobacter spp.	10 (n=2)	5 (n=1)
Proteus spp.	0	0

The results of bacteriological studies obtained from feces in both groups are shown in Table 2.

Table 2

Aerobic bacterial flora of faeces in the examined children

Microflora	Detectability on day 4 in %	
	Underweight	Full-term
It did not give any growth	35 (n=7)	85 (n=7)
Viridans streptococci	15 (=3)	0
Strp.pneumonie	10 (n=2)	0
Streptococcus (A group)	0	0
Streptococcus (D group)	0	0
Staph/epidermidis	10 (n=2)	5 (n=1)
Staph. aureus	0	0
Lactobacillus spp.	0	0
E.Coli	10 (n=2)	5 (n=1)
Klebsilla spp.	5 (n=1)	0
Pseudomonas spp.	5 (n=1)	0
Enterobacter spp.	10 (n=2)	5 (n=1)
Proteus spp.	0	0

The composition of aerobic flora in the faeces of both groups was lower in the number of flora varieties than in the oral cavity. Five of the nine faecal samples from infants under the age of 4 days gave aerobic gram-negative rods in an amount of more than 106 CFU / ml. Four of these infants received antibiotics. The isolation of a species in decreasing numbers from successive specimens usually indicates a transition to a new dominant strain.

According to O.G. Malygin and T.A. Bazhukova (2018), in the neonatal period, there is a pronounced deficiency of colon microbiocenosis in premature infants [3]. By the age of 2 months, the intestinal microflora is slowly forming, mainly due to bifidobacteria. The predominant pathogenic flora in the pharynx is Staphylococcus aureus and beta-hemolytic streptococcus group A; conditionally pathogenic microorganisms with abundant growth, excluding fungi and associations with pathogens, are found in 24.7 %: Streptoccocus viridans – 52.2 %, Staphylococcus epidermidis – 30.4 % [10]. The microflora of the newborn's oral cavity is mainly composed of: a) lactobacilli; b) streptococci; c) neisseria; d) spirochetes [9].

The supposed role of C. perfringens has not been confirmed in later studies [9]. The predominance of proteobacteria was observed in fecal samples of patients with NEC 2 weeks before the clinical development of NEC, which suggests that dysbiosis precedes the onset of NEC [5].

Multiple studies have shown that the main Clostridium species such as Clostridium perfringens, C. butyricum and C. Neonatale play an important role in the etiology of NEC [5]. However, the reported results vary greatly from study to study, and so far no pathogen has been identified as a specific cause of NEC [3].

In our studies, the flora of the throat and feces in 20 premature infants with low birth weight differed in many respects from the flora previously described in the literature in healthy full-term infants. This flora was predominantly gram-negative bacilli, easily established in faeces, and to a lesser extent in the throat; species of microbes considered normal components of oral flora (Str. Salivarius, viridans streptococci and Neisseria spp.) were reduced or absent.

Mixed populations of E. coli, Klebsiella spp., and Bacteroides spp. were primarily found in faeces; at the same time, this flora resembled conditions that are usually associated with formula feeding rather than breastfeeding.

Gram-positive bacteria (aerobic cocci, lactobacilli and clostridia) have become more common by the days they have lived. Although most infants in this study received unprocessed breast milk, especially in the first days of life, the acquisition of lactic acid-producing bacteria in the first 4 days of life was not seeded. The feeding method significantly influenced the composition of colonization by the microflora of the oral cavity and intestines. Parenteral nutrition in the first 4 days of life was associated with delayed colonization in some infants and with a limited variety of colonizing species that were not associated with antibiotic therapy. The effect of parenterally prescribed antibiotics on the developing flora was different.

The revealed limited sensitivity of the B. fragilis group to penicillin and aminoglycosides probably explains their rapid spread during the first week of life in most infants. However, antibacterial therapy has not always allowed to limit the growth of microflora species sensitive to them. For example, E. coli was isolated during the first 11 days of life from one third of infants receiving therapy, despite the fact that all

strains, without exception, had in vitro sensitivity to aminoglycoside in the treatment regimen. When using antibiotics, usually by the 4th day of age, there was a rapid increase in the diversity of identified bacterial flora species.

The use of antibiotics may partially explain the observed delayed colonization of Clostridiurn spp. before the beginning of the 5th day of life. This colonization pattern differs from that described by other types of microbes in healthy full-term infants, both breastfed and artificially fed.

Full-term infants who are breastfed have a large number of mixed-type clostridium in their faeces; and their number decreases by the end of 5 days. Full-term infants who are artificially fed after birth also soon develop clostridia and maintain a high level of colonization during the study period. In premature infants in this study, Clostridiurn spp. appeared in small numbers shortly after birth with faeces in only a few infants. In them, C. butyricurn and C. perfringens were more common than C. dificile. According to the assessment, there was no evidence of systemic spread of intestinal flora. This is encouraging, because as you know, the permeability of the intestinal mucosa in the neonatal period can be increased. On the other hand, in the mucous membrane of the gastrointestinal tract in a premature newborn with a low body weight in the first days of life, it is not sufficiently developed to effectively concentrate inflammatory cells and perform a bactericidal function. The predominance of gram-negative facultative bacteria and potentially pathogenic organisms such as Escherichia coli, Enterobacter and Klebsiella and the underrepresentation of obligate anaerobic bacteria, in particular Negativicutes and Clostridia, in the intestines of infants before the development of necrotizing enterocolitis are consistent with the hypothesis that dysbiosis precedes this severe disease [14].

The analysis of microbiota samples in premature newborns requires the use of complex bacteriological methods and requires a lot of time. In addition, the prognostic value of the distribution of bacterial species, along with the quantification of various strains, is still unclear and requires additional research.

Conclusions

1. In premature infants, normal oral microflora was detected in only 10 % of cases, whereas in full-term infants, normal flora was detected in 95 % of cases.

2. Flora of the throat and feces in premature infants with low birth weight, gram-negative bacilli were predominantly present, easily established in feces, and to a lesser extent in the throat; species of microbes considered normal components of the oral flora (Str. Salivarius, viridans streptococci and Neisseria spp.) were reduced or absent.

3. In premature infants with low body weight, the main cause of intestinal dysbiosis is the predominance of gram-negative facultative bacteria and potentially pathogenic organisms such as Escherichia coli, Enterobacter and Klebsiella and a decrease in the number of obligate anaerobic bacteria. Knowing these differences will help interpret the results of bacteriological research and the use of treatment methods for diseases of the gastrointestinal tract in premature infants.

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DIAGNOSTIC ACCURACY OF IMAGING IN THE DETECTION OF ACUTE PANCREATITIS IN THE POSTOPERATIVE PATIENT

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The purpose of the work was to improve the diagnostic results of acute postoperative pancreatitis through the use of computed tomography. The study included 60 patients aged from 30 to 50 years and older. All patients underwent analysis of data from ultrasound, computed tomography. In the study cohort of patients, patients predominated after undergoing surgery in the area of the pancreas itself, on the organs of the hepatic-pancreatic-biliary zone. Ultrasound confirmed the diagnosis of acute postoperative pancreatitis in 27 patients, and computed tomography data confirmed acute pancreatitis in 36 cases. Among patients with positive ultrasound results, in 22 they were true positive and in 5 they were false positive. Among the 33 patients with negative ultrasound results, 2 were false-negative, while 31 were true-negative. The sensitivity and specificity of ultrasound in diagnosing postoperative acute pancreatitis, using computed tomography as the gold standard, was 91.7 %, 86.1 %.

Keywords: postoperative acute pancreatitis, ultrasound, computed tomography, sensitivity, specificity.

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ДІАГНОСТИЧНА ТОЧНІСТЬ ВІЗУАЛІЗАЦІЇ ПРИ ВИЯВЛЕННІ ГОСТРОГО ПАНКРЕАТИТУ У ПІСЛЯОПЕРАЦІЙНИХ ПАЦІЄНТІВ

Метою роботи стало покращення результатів діагностики гострого післяопераційного панкреатиту шляхом використання комп'ютерної томографії. До дослідження було включено 60 пацієнтів віком від 30 до 50 років і старше. Всім пацієнтам проводився аналіз даних ультразвукового дослідження та комп'ютерної томографії. У досліджуваній когорті хворих переважали пацієнти після перенесеної операції в області підшлункової залози, на органах гепато-панкреато-біліарної зони. УЗД підтвердило діагноз гострий післяопераційний панкреатит у 27 пацієнтів, а дані комп'ютерної томографії підтвердили гострий панкреатит у 36 випадках. При цьому, серед пацієнтів з позитивним результатом ультразвукового дослідження, у 22 вони були істинно позитивними і у 5 помилково позитивними. Серед 33 пацієнтів з негативними результатами УЗД, 2 були помилково-негативними, у той час як 31 – істинно негативними. Чутливість, специфічність ультразвукового дослідження у діагностиці післяопераційного гострого панкреатиту, із застосуванням комп'ютерної томографії як золотого стандарту склала 91,7 %, 86,1 %.

Ключові слова: післяопераційний панкреатит, ультразвукове дослідження, комп'ютерна томографія, чутливість, специфічність.

In the world of medical practice, postoperative pancreatitis is one of the most dangerous and widespread complications of abdominal surgery [3, 6, 8]. Some specialists consider the evaluation of the degree of deviations from the norm of some laboratory parameters, i.e. an increase of pancreatic enzymes in the blood, sufficient for diagnosing this pathology, while others prefer to identify it in the diagnostic approach with the combination of laboratory parameters and clinical signs [10, 13, 14].

High complication rate is associated with surgical operations both on the pancreas and on other organs [11]. According to some authors, the cause of acute pancreatitis can also be an infectious factor [5]. More rarely such complications were recorded against the background of surgical treatment of gallbladder and extrahepatic bile ducts diseases [1]. It is necessary to show some factors that significantly complicate the diagnosis of acute postoperative pancreatitis: the presence of severe concomitant diseases, severe general condition of the patient before, the severity of surgical intervention [15].

A factor that reduces the effectiveness of diagnostic measures is the smoothing of clinical manifestations by analgesic therapy and the presence of symptoms characteristic of the postoperative period [8]. Sometimes the severity of a patient with acute postoperative pancreatitis is regarded as a manifestation