



FEATURES OF THE DIFFERENCE IN CLINICAL AND LABORATORY PARAMETERS IN PATIENTS WITH COVID-19 AND PNEUMONIA WITHOUT COVID-19

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Article history:	Abstract:
<p>Received: 13th October 2022</p> <p>Accepted: 13th November 2022</p> <p>Published: 22nd December 2022</p>	<p>The analysis of clinical and laboratory data of 224 patients with severe COVID-19 and 56 patients with pneumonia without COVID-19 was carried out.</p> <p>The aim of the study was: - To determine the features of the manifestation and course of clinical and laboratory parameters in patients with COVID-19 and pneumonia without COVID-19. The analysis of the obtained results showed that the determination of the clinical and laboratory features of the course of COVID – 19 associated pneumonia in clinical practice is important in the differentiation of patients with purulent surgical inflammatory diseases of the lungs of bacterial etiology. Which inevitably positively affects the quality of treatment of patients with both purulent-surgical lung diseases and COVID-19 associated pneumonia.</p>

Keywords:

RELEVANCE

The problem of diagnosing the treatment of COVID-19 over the past 4 years has been an urgent problem for world science. The emergence and development of the COVID-19 pandemic since 2019-2020, with its peculiarities in the course of clinical and laboratory data, makes the problem more relevant and is of scientific interest to many researchers [3]

Despite the numerous studies in this field of science, to date, both clinical and laboratory data, the differentiation of patients with COVID-19 and pneumonia without COVID – 19 has not been sufficiently studied. There is little information in the literature devoted to the difference between laboratory data on indicators of COVID-19 intoxication from pneumonia without COVID-19 of bacterial etiology.

Purpose of the study: To determine the features of the manifestation and course of clinical and laboratory parameters in patients with COVID-19 and pneumonia without COVID-19.

MATERIAL AND METHODS

The data of examination and treatment of 56 patients with lung abscess of various etiologies who were treated in the purulent surgical department of the clinical base of the Bukhara State Institute in 2012-2021 and 224 patients with severe COVID-19. Who received treatment from July to August 2020 were analyzed in a specialized COVID-19 hospital at the dormitory of the Institute of Technology.

All patients, depending on the method of treatment, were conditionally divided into 2 groups: I - comparison group and II - main. I-control group consisted of 56 (20.0%) patients with acute lung abscess. II - the main group included 224 (80%) patients with severe severity of COVID-19 (according to protocol No. 6)

Table 1

Distribution of patients depending on the type of therapeutic measures

Groups of patients	Treatment method
Group I - comparisons. (n=56)	Patients with lung abscess - (n=56) Traditional method of treatment
Group II - the main group (n=224).	Group II - the main group (n=224). Patients with severe COVID – 19 - 224 According to protocol 6-from 30.06.2020

Control group I 56 patients underwent the traditional method of treatment, including: - conservative, antibacterial, restorative and symptomatic and endobronchial rehabilitation bronchoscopy. In the II main group, in 224 patients, the method of treatment was carried out according to protocol No. 6 of the recommendation approved

by the Ministry of Health of the Republic of Uzbekistan for the examination and treatment of COVID - 19 dated 06/30/2020. According to the protocol, patients with COVID - 19, depending on the severity of the disease, are conditionally divided into 3 groups. And a specific recommendation is given for the scope of research and treatment, taking into account the severity of the patients. All the patients studied by us were from the group of severe patients.

All patients were divided by sex and age according to the classification of age groups adopted at the regional seminar of the World Health Organization in Kyiv in 1963.

Of the 280 examined patients, 176 (62.8%) were male and 104 (37.2%) were women aged 17 to 76 years (mean age was 48.4 ± 2.1 years). Of the examined patients of group I, 39 (69.6%) patients were admitted to the clinic with an acute form of lung abscess, 17 (30.3%) patients were admitted with chronic lung abscess.

Of the 56 patients of group I, 32 (57.9%) patients had a right-sided localization of the purulent focus, 24 (42.1%) patients had a purulent focus of the left lung.

Patients of comparison group I on the day of admission on an emergency basis began conservative empirical antibiotic therapy followed by a change in antibiotics, taking into account the results of sowing purulent contents and taking into account the sensitivity of the microflora. From the moment of admission, all patients were measured body temperature, respiratory rate, an objective examination of the lung (auscultation, percussion), lung spirometry, pulse oximetry, X-ray examination and, if necessary, MSCT of the chest. If necessary, according to indications, sanation bronchoscopy was performed and, according to indications, nasotracheobronchial drainage of a purulent focus of the lungs was performed.

For patients of the main group II, the conservative method of treatment was supplemented with antiviral anticoagulants based on protocol No. 6 of 06/30/2020.

Based on the goal of the work, on the day of admission and in dynamics, all patients were determined clinical and laboratory tests of endogenous intoxication from peripheral blood (hemoglobin concentration, leukocytosis, ESR, LII, LI, MSM), qualitative composition of sputum microflora. At the time of admission and during treatment, the condition of the patients was assessed by clinical signs, according to laboratory and instrumental methods of examination, as well as using X-ray methods of investigation.

RESULTS AND DISCUSSIONS

In 56 patients of the control group, upon admission, they objectively noted: shortness of breath, cyanosis, tachycardia and weakness, in 35% of cases a forced position, and a consistently high body temperature.

As noted above, based on the purpose of the work, the laboratory indicators of signs of endogenous intoxication from peripheral blood (hemoglobin concentration, leukocytosis, ESR, LII, LI, MSM), the qualitative composition of the sputum microflora, and the duration of the patient's stay in the hospital were studied. At the time of admission and during treatment, the condition of the patients was assessed by clinical signs, according to laboratory and instrumental methods of examination, as well as using X-ray methods of investigation.

The studied results of indicators of intoxication of the organism of patients with purulent diseases of the lungs in patients of the I - group of comparison revealed the following changes (Table 2).

Table 2
Dynamics of indicators of intoxication in patients with lung abscess I – comparison group (n=56)

Indicators	Observation time				
	day of admission	Day 3	Day 7	Day 14	Day 20
t ^o body	39,30±0,04	38,20±0,12***	37,90±0,17*	37,20±0,13***	36,70±0,09*
L blood ×10 ⁹ /l	9,90±0,39	8,40±0,47*	7,70±0,28	7,20±0,31	6,80±0,27
MSM unit	0,198±0,010	0,168±0,007*	0,159±0,012	0,132±0,007**	0,121±0,008
ЛИИ unit	2,60±0,07	1,90±0,08***	1,90±0,05	1,60±0,04**	1,40±0,05**
ESR mm/h	46,70±1,64	40,4±1,52*	38,10±1,11**	29,3±1,07***	18,60±0,72***

Note: * - significance of differences relative to the data of the previous day are significant (* - (P<0,05, ** - P<0,01, *** - P<0,001).

As can be seen from Table 2, on the first day of treatment, the body temperature of patients in group I averaged 39.30 ± 0.040 C. The content of blood leukocytes was equal to an average of $9.90 \pm 0.39 \times 10^9$ /l. The volume of medium molecules averaged 0.198 ± 0.010 units. Similarly, there was an increase in LII and ESR.

On the third day of treatment, there was a slight decrease in body temperature from 39.3 ± 0.040 C to 38.20 ± 0.120 C, the number of blood leukocytes decreased to an average of $8.40 \pm 0.47 \times 10^9$ /l. The volume of medium molecules averaged 0.168 ± 0.007 units. There was a decrease in LII and ESR to 1.90 ± 0.08 and 40.4 ± 1.52 , respectively.

By the seventh day of treatment, patients of the comparison group with purulent lung diseases remained slightly subfebrile (37.90 ± 0.17 C). At the same time, for all indicators of intoxication of the body: L, MSM, LII and

ESR, their further decrease was noted, that is, there was a tendency towards normalization - $7.70 \pm 0.28 \times 10^9$; 0.159 ± 0.012 ; 1.90 ± 0.05 ; 38.1 ± 1.11 respectively. By the fourteenth day of treatment, these figures, although they tended to further decrease, remained above the norm.

With further treatment and observation, by the twentieth day, all analyzed indicators of intoxication, except for blood ESR, were within the normal range.

In most cases, out of 56 patients of group I, 29 (51.7%) were sown with pathogenic staphylococci (*Staphylococcus aureus*), of which 13 (44.8%) were in the form of a monoculture, and in 16 (55.1%) in associations. In 14 (48.2%) cases *Pneumococcus* was inoculated, in 4 (13.7%) cases *Escherichia coli* was inoculated. *Proteus* was the next in frequency of detection - 2 (6.8%) observations.

In patients of group II with a severe degree of COVID-19, laboratory indicators of signs of endogenous intoxication from peripheral blood (hemoglobin concentration, leukocytosis, ESR, LII, LI, MSM), coagulogram parameters and PCR study for the detection of coronavirus from the nasopharynx were also studied.

Analysis of the results of indicators of intoxication of the organism of patients of the II - group revealed the following changes (Table 3.). As can be seen from the table, on the first day of treatment, the body temperature of patients averaged 38.40 ± 0.050 C. The content of blood leukocytes was equal to an average of $7.94 \pm 0.17 \times 10^9$ /l. Volume c). The volume of medium molecules averaged 0.188 ± 0.011 units. Similarly, there was an increase in LII and ESR.

Table 3
Dynamics of indicators of intoxication in patients with COVID - 19
II – groups (n=224)

Indicators	Observation time			
	day of admission	3 day	7 day	14 day
t ⁰ body	$38,40 \pm 0,50$	$38,14 \pm 0,11^{**}$	$37,1 \pm 0,13^{***}$	$36,80 \pm 0,23$
L blood $\times 10^9$ /l	$7,94 \pm 0,17$	$7,60 \pm 0,11^*$	$7,10 \pm 0,17^{**}$	$6,90 \pm 0,13^{**}$
MSM unit	$0,188 \pm 0,011$	$0,164 \pm 0,036$	$0,136 \pm 0,019^{**}$	$0,130 \pm 0,008^{***}$
ЛИИ unit	$1,90 \pm 0,11$	$1,60 \pm 0,03^{**}$	$1,3 \pm 0,05^{**}$	$1,0 \pm 0,04$
ESR mm/h	$49,80 \pm 1,66$	$46,20 \pm 1,72^{**}$	$39,80 \pm 2,17^*$	$26,80 \pm 1,80^{***}$

Note: * - significance of differences relative to the data of the previous day are significant (* - ($P < 0,05$, ** - $P < 0,01$, *** - $P < 0,001$).

On the third day of treatment, there was a slight decrease in body temperature from 38.40 ± 0.05 to 38.14 ± 0.11 , the number of blood leukocytes decreased to an average of $7.60 \pm 0.19 \times 10^9$ /l. The volume of medium molecules averaged 0.164 ± 0.036 units. There was a decrease in LII and ESR to 1.60 ± 0.03 and 46.2 ± 1.72 , respectively.

By the seventh day of treatment, patients in the comparison group with purulent lung diseases remained slightly febrile (37.1 ± 0.13 0C). At the same time, for all indicators of intoxication of the body: L, MSM, LII and ESR of blood, their further decrease was noted, that is, there was a tendency towards normalization - $7.10 \pm 0.17 \times 10^9$; 0.136 ± 0.019 ; 1.30 ± 0.05 ; 39.80 ± 2.17 respectively. By the fourteenth day of treatment, these figures, although they tended to further decrease, remained above the norm.

With further treatment and observation, by day 14, all analyzed indicators of intoxication, except for blood ESR, were within the normal range.

All of the above clinical and laboratory course of indicators of COVID - 19 associated pneumonia in clinical practice is important for the differentiation of patients with purulent surgical inflammatory diseases of the lungs, bacterial etiology. Which inevitably positively affects the quality of treatment of patients with both purulent-surgical lung diseases and COVID-19 associated pneumonia.

Thus, patients with COVID - 19 associated pneumonia have their own characteristics of the course according to clinical and laboratory parameters. At the same time, a rise in body temperature up to 38.40 ± 0.50 C, blood leukocytes - 7.94 ± 0.17 , MSM within 0.188 ± 0.011 , and ESR up to $49.80 \pm 1,66$ are characteristic of a severe degree of COVID - 19 associated pneumonia. That in the process of complex treatment by 13-14 days is normalized.

FINDINGS

1. Patients with COVID - 19 associated pneumonia have their own course according to clinical and laboratory data. At the same time, for a severe degree of COVID - 19 associated pneumonia is characteristic: on the day of admission, the average temperature of patients is up to 38.40 ± 0.50 C, blood leukocytes - 7.94 ± 0.17 , MSM in the range of 0.188 ± 0.011 , and ESR up to 49.80 ± 1.66 .

2. Distinctive clinical and laboratory diagnostic signs of COVID -19 associated pneumonia from purulent surgical diseases of the lungs (lung abscess) are: - Clinical manifestations of COVID -19 do not correspond to the degree of

lung damage in a severe CT picture with an unexpressed clinic of septic conditions, relatively mild severity of the general states. With severe lung damage, the temperature of patients in most cases does not exceed 38.5 C. A pronounced violation of the blood coagulation system prevails than in purulent surgical diseases of the lungs.

3. Determining the clinical and laboratory features of the course of COVID - 19 associated pneumonia in clinical practice is important in differentiating patients with purulent surgical inflammatory diseases of the lungs of bacterial etiology. Which inevitably positively affects the quality of treatment of patients with both purulent-surgical lung diseases and COVID-19 associated pneumonia.

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