



AGE-DEPENDENT CHARACTERISTICS OF THE CLINICAL COURSE OF COVID-19-ASSOCIATED LUNG INJURY IN ANDIJAN CONDITIONS

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Abstract

The implementation of the results of the first study based on epidemiological monitoring, pharmacoepidemiological analysis and the developed preventive program led to the following: 1) a "regional portrait" of the population with COVID-19-associated lung injury was formed, which made it possible to use it for active preventive measures. It was widely used in practical activities; 2) early diagnosis of premorbid and comorbid background of COVID-19 lung injury was significantly improved; 3) the risk of thromboembolic complications associated with COVID-19 lung injury was reduced by more than 30% (every third patient); 4) the number of prescribed drugs with potential risks was reduced by 30%; 5) adverse effects and manifestations of drugs were prevented by up to 10% in COVID-19 lung injury; 6) client mortality rate decreased by 20%, rate of appropriate and safe prescribing of antibiotic therapy improved by 90%.

Up to 90% of patients with COVID-19-associated lung injury will be determined by the results of timely and correctly conducted preventive studies.

The validity of the results is confirmed by the correct "targeted" use of epidemiological-objective criteria for assessing the condition of the patient population, modern methods of biochemical, laboratory and instrumental diagnostics, and methodological approaches. Processing with statistical analysis confirmed the reliability of the recorded epidemiological-clinical results.



Keywords: COVID-19, COVID-19-associated lung injury, premorbid and comorbid background, preventive studies, epidemiology, prevention, treatment.

ВОЗРАСТНЫЕ ОСОБЕННОСТИ КЛИНИЧЕСКОГО ТЕЧЕНИЯ COVID-19-АССОЦИИРОВАННОГО ПОРАЖЕНИЯ ЛЕГКИХ В УСЛОВИЯХ АНДИЖАНА

АННОТАЦИЯ:

Внедрение результатов первого исследования, основанного на эпидемиологическом мониторинге, фармакоэпидемиологическом анализе и разработанной профилактической программе, привело к следующим результатам: 1) сформировался «региональный портрет» населения с поражением легких, ассоциированным с COVID-19, что позволило использовать его для активных профилактических мероприятий. Он широко применялся в практической деятельности; 2) значительно улучшилась ранняя диагностика преморбидного и коморбидного анамнеза поражения легких при COVID-19; 3) риск тромбоэмболических осложнений, связанных с поражением легких при COVID-19, снизился более чем на 30% (каждый третий пациент); 4) количество назначаемых препаратов с потенциальными рисками снизилось на 30%; 5) удалось предотвратить побочные эффекты и проявления лекарственных препаратов при поражении легких при COVID-19 до 10%; 6) смертность пациентов снизилась на 20%, показатель адекватного и безопасного назначения антибиотикотерапии повысился на 90%.

До 90% пациентов с поражением легких, связанным с COVID-19, будут выявлены по результатам своевременно и правильно проведенных профилактических исследований.

Достоверность результатов подтверждается правильным «целенаправленным» использованием эпидемиологическо-объективных критериев оценки состояния популяции пациентов, современными методами биохимической, лабораторной и инструментальной диагностики, а также методологическими подходами. Обработка с помощью



статистического анализа подтвердила надежность зарегистрированных эпидемиологическо-клинических результатов.

Ключевые слова: COVID-19, поражение легких, связанное с COVID-19, преморбидный и коморбидный анамнез, профилактические исследования, эпидемиология, профилактика, лечение.

Introduction

The global spread of COVID-19, the novel coronavirus disease, began in December 2019 and was declared a pandemic by the WHO. In a short period of time, as of May 10, 2020, COVID-19 had spread to more than 3 million people in 166 countries. During this period, dedicated research has been conducted, manuals and numerous publications have been published, and practical activities have been intensified [2, 3, 6, 11, 4].

At the same time, it is possible to “take a lead” from scientific sources that existing clinical studies have shown very important results and that preventive directions, especially in the case of COVID-19, can be shown in general [4, 18, 10, 1, 7, 19].

Respiratory disorders caused by COVID-19 manifest in various forms and persist long after the COVID infection has resolved as a post-COVID syndrome (PS) [13].

According to Woodruff P. et al. (2016), Song W.J. et al. (2021), Venka-tesan P. (2021) and Richardson S. et al. (2020), coronaviruses are considered one of the main risk factors for lung damage, especially bronchoobstructive syndrome (BOS), due to their “inducing” properties. An association between Severe Acute Respiratory Syndrome – related Coronavirus – 2 (SARS-Cov-2) and respiratory disorders has been shown [24, 15, 23, 14].

Therefore, it is important to study the epidemiology, clinical manifestations, pharmacotherapy, and modern aspects of prevention of lung damage caused by COVID-19. This is precisely the opinion, conclusions, and recommendations that are reflected in recent studies and scientific sources during and after the COVID-19 period [12, 5, 14, 8, 17, 16, 9].



The fact that extensive research has been conducted in this context is also evident from the literature review. The data presented by the researchers confirm, in particular, that various treatment methods are currently being developed or approved for coronavirus infection and associated diseases, including patients with COVID-19 b OS [21, 20, 22].

Based on the review of the literature on the chapter, it can be concluded that at present, COVID-19 b OS remains one of the most important and multifaceted, mainly epidemiological problems. It is necessary to develop technologies for early detection of various clinical forms of COVID-19 b OS, eliminate the iatrogenic risk of pharmacotherapy, and predict the risk of severe disease. Significant scientific research in this direction is being paid special attention worldwide. There is an urgent need and necessity to conduct separate epidemiological studies on the epidemiology, premorbid and morbid background, clinical manifestations, pharmacoepidemiology and search for effective prevention methods of lung damage with COVID-19 on a global scale, including in the territory of Uzbekistan. Such studies have not been conducted in Uzbekistan and there is no data. In this direction, the creation of an optimal model and system of preventive medicine, as shown by the analysis of the literature, is an urgent scientific problem both on a global scale and in Uzbekistan. The results obtained in this way will bring medical, social and economic benefits, almost eliminating medical disasters and reducing costs by several orders of magnitude.

The aim of the study is to study the prevalence, premorbid background, clinical manifestations, and pharmacoepidemiology of lung injury with COVID-19, and to identify effective prevention methods.

Material and methods

Object of research Venous blood and serum from patients infected with COVID-19 were collected for biochemical and immunological tests.

Research methods: The research uses epidemiological, clinical, instrumental, laboratory, immunological, and statistical research methods.

Results

The description of the regional characteristics of the clinical course of COVID-19-associated lung injury depending on age is shown in Table 1 and Figure 1.

The data in the table and figure show that the expression of clinical manifestations of COVID-19-associated lung injury depending on age is confirmed in the conditions of Andijan with the following frequencies of detection: 1) mild pneumonia, respectively, in 18-24 year olds - 37.6%, in 25-44 - 37.7%, in 18-74 year olds - 37.7%, in 45-59 - 37.7%, in 60-74 - 38.0% and in 45-74 year olds - 37.8% ($P>0.05$);

2) severe pneumonia – 22.3% in 18–24 years, 22.4% in 25–44 years, total – 22.3% in 18–44 years, 22.3% in 45–59 years, 22.3% in 60–74 years and 22.2% in 45–74 years [$P>0.05$]; 3) pneumonia with acute respiratory failure – 6.4% in 18–24 years, 6.4% in 25–44 years, 6.4% in 18–44 years, 6.4% in 45–59 years, 6.2% in 60–74 years and 6.3% in 45–74 years [$RR=0.98$; 95% $CI=0.66–1.46$; $p>0.05$]; 4) pneumonia without acute respiratory failure – 23.8%, 25–44 – 23.4%, 18–44 – 23.7%, 45–59 – 23.7%, 60–74 – 23.3% and 45–74 – 23.5% [$RR=0.99$; 95% $CI=0.87–1.20$; $p>0.05$]; 5) pneumonia with acute respiratory distress syndrome - 6.9% at 18-24 years, 7.0% at 25-44, 7.0% at 18-44, 7.1% at 45-59, 6.8% at 60-74, and 7.0% at 45-74 [$RR=1.0$; 95% $CI=0.68 – 1.46$; $p>0.05$];

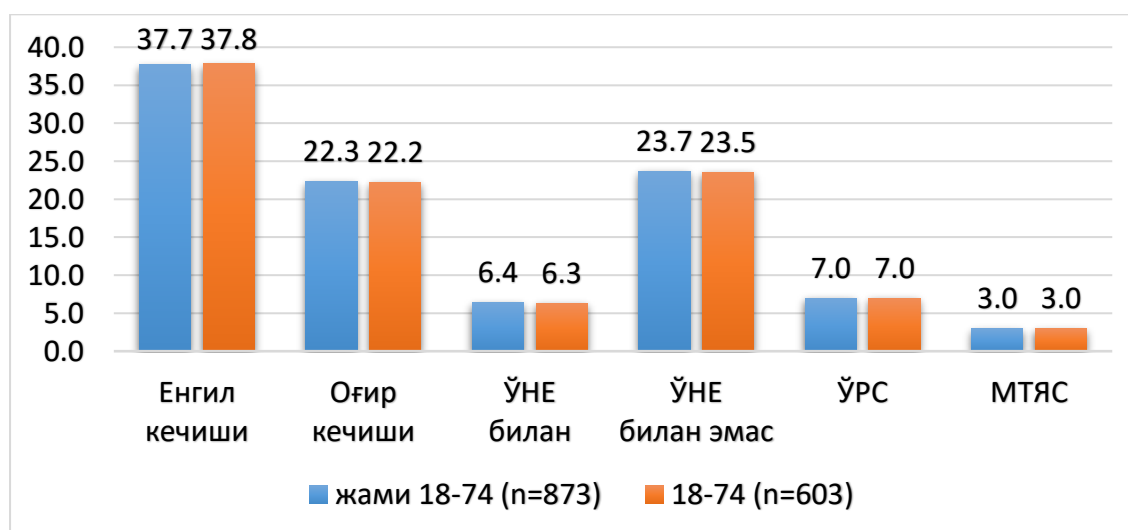


Figure 1. Clinical presentation of COVID-19-associated lung injury in the Valley population of different ages



Table 1 Description of regional characteristics of the clinical course of COVID-19-associated lung injury depending on age

Clinical presentation of COVID-19-associated lung injury	Youth groups												X ²	RR	95% CI	P
	18-24 age (n=404)		25-44 age (n=469)		total 18-74 (n=873)		45-59 age (n=337)		60-74 age (n=266)		18-74 age (n=603)					
	N	%	N	%	N	%	N	%	N	%	N	%				
Mild course of pneumonia	152	37,6	177	37,7	329	37,7	127	37,7	101	38,0	228	37,8	0	1	0,88 - 1,15	>0,05
A severe course of pneumonia	90	22,3	105	22,4	195	22,3	75	22,3	59	22,2	134	22,2	0	0,99	0,82 - 1,21	>0,05
Pneumonia with acute respiratory failure	26	6,4	30	6,4	56	6,4	21	6,2	17	6,4	38	6,3	0	0,98	0,66 - 1,46	>0,05
Pneumonia without acute respiratory failure	96	23,8	111	23,7	207	23,7	80	23,7	62	23,3	142	23,5	0	0,99	0,82 - 1,20	>0,05
Pneumonia with acute respiratory distress syndrome	28	6,9	33	7,0	61	7,0	24	7,1	18	6,8	42	7,0	0	1	0,68 - 1,46	>0,05
Pneumonia with multisystem inflammatory syndrome (sepsis)	12	3,0	14	3,0	26	3,0	10	3,0	8	3,0	18	3,0	0	1	0,57 - 1,76	>0,05
Pneumonia + Bronchial asthma	21	5,2	24	5,1	45	5,2	17	5,0	14	5,3	31	5,1	0	0,99	0,65 - 1,49	>0,05
Pneumonia + chronic obstructive pulmonary syndrome	28	6,9	32	6,8	60	6,9	24	7,1	18	6,8	42	7,0	0	1,01	0,71 - 1,45	>0,05

6) option of pneumonia with sepsis - 3.0% at 18-24, 3.0% at 25-44, 3.0% at 18-44, 3.0% at 45-59, 3.0% at 60-74, and 3.0% at 45-74 [RR=1.0; 95% CI=0.57 – 1.76; p>0.05]; 7) "Pneumonia+BA" variant clinical course - 5.2% at 18-44, 5.1% at 25-44, 5.2% at 18-44, 5.0% at 45-59, 5.3% at 60-74 and 5.1% at 45-74 years old [RR=0.99; 95% CI=0.65 – 1.49; p>0.05]; 8) The prevalence of "Pneumonia+AS" comorbidity is characterized by the following frequencies: 18–24 years – 6.9%, 25–44 years – 6.8%, 18–44 years – 6.9%, 45–59 years – 7.1%, 60–74 years – 6.8% and 45–74 years – 7.1%, 60–74 years – 6.8% and 45–74 years – 7.0% [RR=1.01; 95% CI=0.71–1.45; p>0.05].

The results show that the majority of COVID-19-associated lung damage, in the form of pneumonia and pneumonia without acute respiratory syndrome, was observed in 25–44 years old.

Conclusion

Based on the results of the study, a mathematical model was created to assess the role of premorbid (overweight, hypertension, smoking, physical inactivity, AI) and comorbid background (bronchial asthma, chronic obstructive pulmonary



disease, cardiovascular, gastrointestinal, urinary tract diseases, anemia, endocrine diseases) in the occurrence of COVID-19-associated lung injury, and their predictive characteristics were determined using this model.

On this basis, the risks of COVID-19-associated lung injury at “very high”, “high”, “low” and very low levels were predicted and confirmed. The prevention program “Effective optimized way of preventing COVID-19-associated lung injury (on the example of the Fergana Valley)” was created and recommended for practice.

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