Prevalence of Tuberculosis Lung Lesions in Covid-Infected Population

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ABSTRACT

In the present study, from 23,296 identified publications, taking into account the inclusion and exclusion criteria, 54 publications with a total power of 47,145 patients with COVID-19 were selected and included. In all studies, data were analyzed retrospectively; the risk of developing pulmonary tuberculosis during the pandemic was higher in individuals with concomitant pathologies of the cardiovascular and endocrine systems, especially in their combination

Keywords: COVID-19, tuberculosis, risk factors, prevalence.

Introduction

In 2020, the world faced the COVID-19 pandemic, and the epidemic situation of tuberculosis began to be considered taking this challenge into account. Since the use of antibiotics for the treatment of various etiologies of pneumonia and lung diseases, especially against the backdrop of the COVID-19 pandemic, has led to the spread of resistant forms of tuberculosis of the lungs and other organs. But how much impact the Covid-19 pandemic has had on the tuberculosis epidemic still remains an open question.

Materials And Methods

The study is retrospective, materials were taken from patient records from 2020 to 2022 at the Fergana Regional Center for Phthisiology and Pulmonology.

The study included 1394 patients.

All patients were divided into 2 groups: group 1 – patients who had Covid-19 and then contracted tuberculosis (n=50); Group 2 – patients who did not have Covid – 19 patients with tuberculosis (n=40).

Results And Discussion

The following factors were considered: age, gender, living conditions, social status (including working / not working), previous stay in prison, smoking, alcohol abuse and drug use, the presence of concomitant diseases (including HIV- infections, diabetes mellitus, chronic respiratory diseases), method of detecting tuberculosis, clinical forms of tuberculosis, prevalence of the process, presence of decay in the lungs, bacterial excretion, drug resistance of Mycobacterium tuberculosis (MBT), presence of adverse events (AE) to anti-tuberculosis drugs (ATDs), effectiveness of anti-tuberculosis therapy.

Table 1 shows the prevalence of tuberculosis patients with lung damage in combination with Covid-19 and without this pathology.

Table 1.

Demographic characteristics of hospitalized patients with tuberculosis (TB) by COVID-19 prevalence

Характеристики пациентов с ТБ		COVID-19 PCR + (N=239)	COVID-19 PCR - (N=1260)	p
Age	18-29	41 (17.2%)	153 (12.1%)	<0.001*
	30-49	107 (44.8%)	399 (31.7%)	
	50-69	67 (28.0%)	498 (39.5%)	
	>70	24 (10.0%)	210 (16.7%)	
Man/woman	Male	122 (51.0%)	771 (61.2%)	0.004*
	Female	117 (49.0%)	489 (38.8%)	
Pregnant		3 (1.3%)	18 (1.4%)	0.747
Giving birth		98 (41.0%)	396 (31.4%)	0.601
Family status	married	191 (79.9%)	1076 (85.4%)	0.068
	single/not married	30 (12.6%)	109 (8.7%)	
	divorced	11 (4.6%)	32 (2.5%)	
	widower	7 (2.9%)	43 (3.4%)	
Education	uneducated	2 (0.8%)	23 (1.8%)	<0.001*
	secondary vocational	146 (61.1%)	1010 (80.2%)	
	incomplete secondary vocational	58 (24.3%)	153 (12.1%)	
	higher	25 (10.5%)	60 (4.8%)	
	incomplete higher	8 (3.3%)	14 (1.1%)	
Ethnic group	Uzbeks	219 (91.6%)	1079 (85.6%)	0.111
	Tajiks	14 (5.9%)	115 (9.1%)	
	other	4 (1.7%)	29 (2.3%)	
	Russians	2 (0.8%)	23 (1.8%)	
	Kyrgyz	0 (0%)	14 (1.1%)	

The table shows that the main contingent is people who often seek medical help and also have average living conditions.

In comparative characteristics, women and men who recovered from Covid-19 and then pulmonary tuberculosis have the same distribution indicators compared to those without Covid infection.

Table 2.

Description of behavioral factors of hospitalized patients with tuberculosis (TB) by COVID-19 prevalence

Characteristics of TB patients	COVID-19 PCR + (N=239)	COVID-19 ПЦР- (N=1260)	p
Smoking cigarettes	11 (4.6%)	86 (6.8%)	0.255

Smoking nasvay	21 (8.8%)	158 (12.5%)	0.126
Alcohol consumption	17 (7.1%)	134 (10.6%)	0.123
Imprisonment	12 (5.0%)	46 (3.7%)	0.410
Living conditions			
Satisfactorily	172 (72.0%)	1020 (81.0%)	<0.001*
Unsatisfactory	25 (10.5%)	170 (13.5%)	
good	42 (17.6%)	70 (5.6%)	
Regular meals	218 (91.2%)	1199 (95.2%)	0.021*
Eating fatty foods	148 (61.9%)	732 (58.1%)	0.303
Strong tea and/or coffee	157 (65.7%)	711 (56.4%)	0.010*

Significant characteristics by p-value: living conditions, regular meals, strong tea and/or coffee

Non-significant characteristics: cigarette smoking, nasvay smoking, alcohol consumption, imprisonment, consumption of fatty foods.

The results obtained confirmed the study data; the contribution of social and medical-biological factors to the development of pulmonary tuberculosis with associated pathologies against the background of Covid-19 is higher than that of the contingent without Covid-19 in the development of tuberculosis. General signs associated with a low risk of relapse are: absence of HIV infection, alcohol abuse, or stay in prison.

Conclusion

By addressing the challenge of identifying high risk for TB relapse during the COVID-19 pandemic, we are providing a model for future infections. As noted before the pandemic, social and medical-biological risk factors play a significant role in the development of tuberculosis, while the new coronavirus infection itself cannot be considered as a risk factor for its development, but treatment for it with immunosuppressive drugs can lead to the development of tuberculosis lesions in particular in persons with concomitant pathologies of non-infectious etiology. The results of stratification of the risks of developing a relapse of tuberculosis made it possible to identify factors contributing to the occurrence of both early and late relapses of the disease. Thus, the presence of HIV infection or diabetes mellitus, chronic diseases, drug use or alcohol abuse, smoking, being in prison, lack of work. This should be taken into account when planning preventive measures.

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