



POST-COVID SYNDROME AFTER THE ACUTE INFECTION AMONG PATIENTS WHO VISITED A PULMONOLOGIST

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ABSTRACT

Background: The coronavirus is one of the common pathogens among humans and animals that causes various respiratory diseases

Methods: Alternative, non-parametric and correlation analysis were used.

Logical units of observation: Two hundred patients suffered from COVID-19 in the period from 01.09.2020 until 01.09.2021.

Results: In our study, the majority of respondents who had recovered from COVID-19 reported having one or more persistent symptoms. Only 1% had no residual complaints. With regard to the dating of the complaints that appeared, 74% or the main part of our respondents indicated a period of 1-3 months, and the fewest complaints were observed in the 9-12 months after recovery. As age increases, cardiac complaints also increase $p=0.001$ ($\chi^2=79.51$). The correlation relationship is straight and significant $p=0.001$ ($r=0.619$).

Conclusion: Complex rehabilitation is part of the overall treatment plan and includes special physical and rehabilitation activities, health care, healthy behavior, education and prevention of post-infection complications.

Keywords: Post-COVID syndrome, patients, Pulmonologist,

INTRODUCTION

The coronavirus is one of the common pathogens among humans and animals that causes various respiratory diseases [1]. In December 2019, a new type of coronavirus (coronavirus disease 2019 [COVID-19]) caused an acute respiratory disease that began in the Hubei Province, Wuhan City, China, and in a very short time spread worldwide, causing many deaths [2, 3]. Bulgaria was also one of the countries that was affected, with the first cases of the virus being detected on 03/08/2020 [4].

Post-COVID-19 syndrome, describing the experience of persistent symptoms after recovery from the initial acute COVID-19, has recently attracted increased attention [5, 6, 7, 8].

However, the available knowledge of the syndrome after COVID-19 is still weak and controversial due to the lack of a consensual definition [9] and future diagnostic studies.

The purpose of this research was to investigate what the complaints of patients who visited a Pulmonologist specialist are and how long they last.

MATERIALS AND METHODS

Alternative, non-parametric and correlation analyses were used.

Logical units of observation: Two hundred patients suffered from COVID-19 in the period from 01. 09. 2020 until 01. 09. 2021

The reason for the examination of the studied patients was persistent symptoms after recovery from COVID-19 related to the respiratory system.

Trained nurses interviewed patients after the examination with a questionnaire surveying specific persistent or emerging symptoms after a relapse of COVID-19.

Independent doctors specializing in Pulmonology categorized their narratives.

RESULTS

Table 1. Socio-demographic and clinical characteristics of the examined patients

Indicators	Number	%
Gender		
• Male	83	41,5
• Female	117	58,5
Age group		
• Up to 30	24	12
• 31 - 40	89	44,5
• 41 - 50	22	11
• 51 - 60	44	22
• 61 - 70	21	10,5
Smoking		
• Yes	52	26
• No	125	62,5
• Ex-smoker	23	11,5
Vaccinated		
• Yes	64	32
• No	136	68
Do you take any medication for accompanying diseases?		
• Yes		
• No	124	62
Accompanying diseases		
• Pulmonary	19	9
• Neurological	17	8,5
• Endocrine	48	24
• Cardiovascular	87	43,5
• Musculoskeletal	10	5
• Oncological	13	6,5

The patient study included 200 people. The majority of those examined were women - 58.5%, compared to men - 41.5%. The largest group of respondents are in the age range of 31-40 years, followed by 51-60 years. The majority of respondents are unvaccinated - 68%. We cannot fail to note the positive fact that just 26% of the researched are active smokers (Table 1).

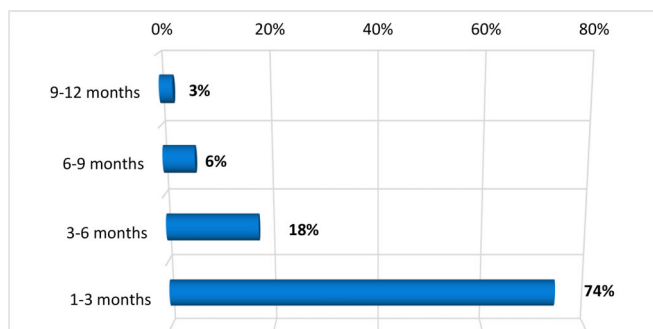
In our study, the majority of respondents who had recovered from COVID-19 reported having one or more persistent symptoms. Only 1% had no residual complaints. Tiredness, coughing, fatigue and shortness of breath are among the most commonly reported symptoms, followed by heart palpitations, sweating, loss of smell and taste, chest pain, "brain fog", insomnia, headache and hair loss.

Table 2. Number and types of symptoms in the examined/studied patients with COVID-19

Indicators	Yes/% Number
Number of symptoms	
0	2(1)
1	29(14,5)
2	41(20,5)
3	60(30)
4	45(22,5)
5+	23(11,5)
Types of symptoms	
• tiredness	120(60)
• cough	103(51,5)
• fatigue	86(43)
• heart palpitations	58(29)
• sweating	54(27)
• shortness of breath	42(21)
• loss of smell	41(20,5)
• loss of taste	34(17)
• chest pain	19(9)
• "brain fog"	17(8,5)
• insomnia	12(6)
• hair loss	11(5,5)
• headache	10(5)

With regard to the dating of the complaints that appeared, 74% or the main part of our respondents indicated a period of 1-3 months, and the fewest complaints were observed in the 9-12 months after recovery (Fig. 1).

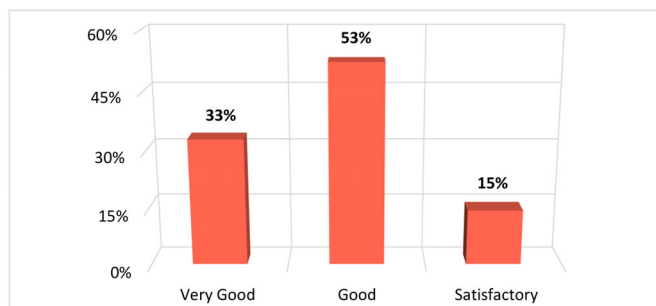
Fig. 1. How long after recovery the complaints appeared



The health status of the patients before the onset of symptoms is essential to understand, so we asked them to do a self-assessment.

In half, 52.5% is "good". More than a quarter rated their health as "very good", 14.5% of respondents chose "satisfactory" (Fig. 2)

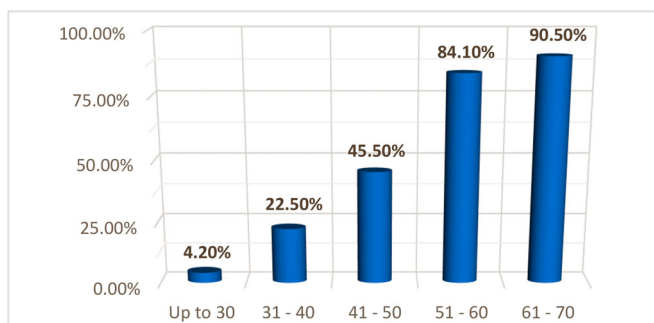
Fig. 2. Self-assessment of health before the onset of symptoms



The influence of the respondents' age on cardiovascular disease was analyzed. Age turned out to be a key factor in the disease. As age increases, cardiac complaints also increase $p=0.001$ ($\chi^2=79.51$). The correlation relationship is straight and significant $p=0.001$ ($r=0.619$) (Fig. 3).

There is also a similar relationship with the accompanying diseases in patients; the leading place is occupied by the diseases of the circulatory organs, followed by those of the endocrine system. With approximately the same percentage, the respondents indicated: oncological, neurological, musculoskeletal and respiratory system diseases (Table 1).

Fig. 3. Correlation between age and heart complaints



It was found that gender is a factor influencing smoking in men $p=0.001$ ($\chi^2=46.52$); pulmonary diseases $p=0.001$ ($\chi^2=7.69$); neurological diseases in women $p=0.001$ ($\chi^2=9.70$); endocrine diseases in women $p=0.001$ ($\chi^2=16.04$).

Regarding the symptom "hair loss", gender was found to have a key role in women $p=0.001$ ($\chi^2=5.04$) and the symptom "fatigue" $p=0.001$ ($\chi^2=9.60$).

This explains the high percentage of our respondents. Gender also influences the types of accompanying diseases.

Smoking has a significant effect on heart diseases as well, $p=0.001$ ($\chi^2=7.760$).

DISCUSSION

In our study, all but 1% of patients were found to have one or more symptoms. The predominant symptoms are tiredness, cough, fatigue and shortness of breath. We must note the fact that when looking for a specialist pulmonologist, the leading symptoms in our patients are from the respiratory system, and the other complementary ones are the result of various factors, such as gender, age, accompanying diseases, etc.

Tiredness and fatigue appear to be the most common symptoms in studies of both hospitalized and non-hospitalized patients [5, 10, 11, 12, 13, 14, 15, 16, 17]. The literature shows that Covid-19 has several manifestations, from asymptomatic to life-threatening [6, 12].

In one study, only 0.7% of patients were completely asymptomatic after illness [18].

In our study, we found that persistent symptoms occurred within a year, with a large percentage of respondents occupying the first trimester.

Nevertheless, we cannot ignore the fact that even with a small percentage they are also observed in the other quarters.

Considering that residual somatic and functional problems are found in patients and persist for a long period of time, impairing their quality of life.

We also must not forget that patients with a more severe course will stay for a different period of time with a different pronounced imbalance of the immune system and with an increased risk of infection with other pathogens.

CONCLUSION

The therapy of post-covid symptoms is mainly conducted in outpatient care, requires an experienced multidisciplinary team, an individualized approach and long-term respiratory rehabilitation. The comprehensive program includes pulmonary rehabilitation to increase lung capacity and overall metabolic effects. Complex rehabilitation is part of the overall treatment plan and includes special physical and rehabilitation activities, health care, healthy behavior, education and prevention of post-infection complications.

The follow-up of patients should mainly involve general practitioners, and although the most involved in this process are pulmonologists, due to the most serious involvement of the respiratory system, expert consultation is also necessary from neurologists, psychiatrists and psychologists, cardiologists, gastroenterologists and nephrologists, who will face the most common consequences of COVID-19.

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