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Jorge Félix Rodríguez Ramos *

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Research Article

Risk Factors Related to Post covid–19 Syndrome in Residents from Pinar Del Río

Jorge Félix Rodríguez Ramos [1]*, Juan Cordero Martínez [2], Lic. Greter Cordero de la Nuez [3]

[1]Specialist in General Integral Medicine (Second Degree), Master's in Medical Emergencies, Assistant Professor. Associate Researcher. Turcios Lima Polyclinic.

[2]Specialist in Internal Medicine (First Degree), Instructor Professor. Turcios Lima Polyclinic.

[3]Bachelor of Science in Psychology, Master's in Psychology. Assistant Professor. Turcios Lima Polyclinic.

***Corresponding Author:** Jorge Félix Rodríguez Ramos, Policlínico Universitario Luis Augusto Turcios Lima. Pinar del Río, Cuba.

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Abstract

Introduction: The possibilities of suffering the syndrome postCOVID 19 grow up inasmuch as the pandemic spreads.

Objective: Determining the influence of the different factors of risk for the appearing of the syndrome postCOVID 19 in the Policlinic Turcios Lima.

Methods: It came true a case study and controls in the year 2022. They were taken as universe of study to the patients attended in consult multidisciplinary de convalescents in the Policlinic Turcios Lima with this disease. Patients will be once 1:2 were included of aleatory way (100 cases 200 controls). I apply to them an opinion poll these patients in the medical consultations, as well as to the controls, previous reported consent. The statistical analysis was based on a univaried strategy, that ratio (OR) for each factor of risk, as in the estimate of his confidence intervals consisted in the determination of the odds to the 95 % (IC 95 %) and the proof of x2 with a significance level statistical of P <0.05.

Results: The more frequent factors of risk were: The feminine sex, the comorbidity associated, the pharmacologic treatment, the ventilatory support, the presence of established sequelae and the developed complications.

Findings: In spite of identifying the factors of risk more frequents, the same keep on being a challenge for the health-care professionals.

Recommendations: Accomplishing epidemiologic education on the factors of risk of the syndrome post COVID 19.

Keywords: syndrome post covid 19; factors of risk; epidemic; case study and controls

Introduction

Post-COVID-19 syndrome is defined by the persistence of clinical signs and symptoms that arise during or after having COVID-19 (4 weeks), persist for more than 12 weeks, and are not explained by an alternative diagnosis. Symptoms may fluctuate or cause flare-ups.1-3 The term 'long COVID' is commonly used to describe the signs and symptoms that continue or develop after acute COVID-19, and includes both ongoing symptomatic COVID-19 and post-COVID-19 syndrome.4-6 Factors that explain the heterogeneity of post-COVID-19 syndrome have been described: Residual symptoms. Multi-organ damage/sequelae. Consequence of prolonged hospitalization. Consequence of residual inflammation. Exacerbation of pre-existing comorbidities. Chronic fatigue syndrome. Post-traumatic stress disorder. Psychosocial effect of confinement/social isolation.7-9 Four different categories are described (Cochrane): Symptoms that persist from the acute phase. Symptoms associated with a new illness. Late-onset symptoms, which arise at the end of the acute phase. Impact on a pre-existing pathology or disability.10-12 Long-term consequences are also described (NICE): Acute COVID-19 (4 weeks). Ongoing symptomatic COVID-19 (4 to 12 weeks). Post-COVID-19 syndrome (persistence of clinical signs and symptoms for more than 12 weeks)13-15 Post-COVID-19 syndrome affects most organs

and systems of the body, producing respiratory, cardiovascular, neurological, cognitive, psychiatric, gastrointestinal, and systemic symptoms.16-18 A large number of factors influence its development: age, the presence of comorbidities, the type of acute infection, the complications developed, the established sequelae, the pharmacological treatments received, hospitalization, and age under 50 years.18-20 There are few published studies on this topic worldwide; therefore, based on the high incidence and morbidity and mortality rates, the magnitude and significance of the disease, the vulnerability of the patients, and the feasibility of studying it, we decided to conduct this study with the objective of determining the influence of different risk factors on the development of post-COVID-19 syndrome at the Turcios Lima Polyclinic during 2022.

Methods

A case-control study was conducted in 2022 to investigate risk factors that might influence the development of post-COVID-19 syndrome. The study population consisted of patients treated for this condition at the multidisciplinary convalescent clinic at the Turcios Lima Polyclinic. Patients were included randomly in a 1:1 ratio (100 cases/200 controls). These patients, as well as the controls, completed a survey during their medical consultations, after providing informed consent. The variables studied, based on the survey, were: age (under or over 50 years), sex (male and female), place of residence (urban or rural), occupation (preschooler, student, worker, housewife, retired, and unemployed), obesity (BMI > 30 kg/m2), presence of associated comorbidities (hypertension, diabetes mellitus, ischemic heart disease, bronchial asthma, chronic obstructive pulmonary disease, obesity, etc.), clinical characteristics of the infection, such as the type of infection (mild, severe, or critical), the duration of symptoms (< 12 weeks and > 12 weeks), and the severity of the initial clinical presentation (< 5 symptoms and > 5 symptoms), the medical management of the infection, such as the need for hospitalization, and pharmacological treatment: (according to the national protocol) (suspected cases): Antivirals. Antibiotics. Interferon alpha 2b. Hospital Isolation Ward: Antivirals. Interferon alpha 2b. Steroids. Broad-spectrum antibiotics if bacterial superinfection is suspected. Evaluation of the disease progression and determination of the continuation of this treatment. Treatment of comorbidities, according to their state of compensation. Evaluation of the use of ventilatory support, as well as the progression of the disease (complications developed and established sequelae). Case definition: Individuals recovering from COVID-19 with post-COVID-19 syndrome.

Control definition: Individuals recovering from COVID-19 without post-COVID-19 syndrome.

Inclusion criteria:

1. Patients belonging to the Turcios Lima Polyclinic.
2. Signed informed consent.

Exclusion criteria:

1. Surgical disease or acute trauma in the last 3 months.
2. Acute generalized sepsis in the last 3 months.
3. Acute psychiatric illness in the last 3 months.

The statistical analysis was based on a univariate strategy, which consisted of determining the odds ratio (OR) for each risk factor hypothetically influencing the occurrence of post-COVID-19 syndrome, as well as estimating its 95% confidence intervals (95% CI) and the χ^2 test with a statistical significance level of $P < 0.05$. For each risk factor, the hypothesis that the population OR was significantly greater than 1 was accepted. The EpiInfo 2000 statistical package was used.

Ethical considerations: Compliance with the principles stipulated in the Nuremberg Code (1947) and the Declaration of Helsinki (1989), which contains the Recommendations for Physicians in Biomedical Research Involving Human Subjects, was taken into account.

Resulted

The analysis of sociodemographic factors (Table 1) revealed that female sex was a risk factor associated with the onset of the disease, increasing the risk by more than 1.6 times (OR=1.63), 95% CI (5.66-7.44), (P>0.05), followed by occupation (studying or working) which increased the risk by more than 2 times (OR = 2.63), 95% CI (2.29-3.02), (P<0.001), and urban residence, which increased the risk by more than 3 times (OR = 3.06), 95% CI (0.36-25.79), (P<0.001), all of which were highly statistically significant.

	CASOS N=100		CONTROLES N=200		OR	IC	X2
Variables	**No**	**%**	**No**	**%**			
Edad							
< 50 años	35	35,0	75				
> 50 años	65	65,0	125	75,06	0,90	0,54-1,48	0,18 (P>0,05)
Sexo							
Masculino	29	29,0	40	61,70			
Femenino	71	71,0	160	38,3	1,63	0,94-2,84	3,05 (P>0,05)
Zona de residencia							
Urbana	71	71,0	175	75,40	3,06	0,36-25,79	509,03 (P<0,001)
Rural	29	29,0	25	24,60			
Ocupación (Estudia o trabaja)							
Si	60	60,0	15	78,75	2,63	2,29-3,02	199,93 (P<0,001)
No	40	40,0	25	21,25			

Table 1: Sociodemographic factors. Turcios Lima Polyclinic. Year 2022.

Table 2 shows the factors related to associated comorbidities, where diabetes mellitus constituted a risk factor related to the onset of the disease by more than 4 times (OR=4.82), (CI 1.63-14.29), (P<0.001), followed by bronchial asthma and COPD by more than 3 times (OR=3.89), (CI 1.71-8.86), (P<0.001), both highly significant. Ischemic heart disease was a risk factor by more than 2 times (OR=2.35), (CI 0.96-5.73), (P<0.05), and hypertension by 1.49 times (OR=1.49), (CI 0.90-2.47), (P>0.05).

	CASOS		CONTROLES		OR	IC	X2
Variables	**N =100**	**%**	**N =200**	**%**			
HTA							
Si	39	39	60	30,0	1,49	0,90-2,47	2,44 (P>0,05)
No	61	61	140	70,0			
DM							
Si	11	11	5	2,5	4,82	1,63-14,29	9,54 (P<0,001)
No	89	89	195	97,5			
CI							
Si	11	11	10	5,0	2,35	0,96-5,73	3,69 (P>0,05)
No	89	89	190	95,0			
AB							
Si	17	17	10	5,0	3,89	1,71-8,86	11,72 (P<0,001)
No	83	83	190	95,5			
EPOC							
Si	8	8	5	2,5	3,39	1,08-10,65	4,86 (P<0,05)
No	92	92	195	97,5			
Obesidad							
Si	40	40	90	45,0	0,81	0,52-1,33	0,68 (P>0,05)
No	60	60	110	55,0			

Table 2: Factors related to associated comorbidities. Turcios Lima Polyclinic. Year 2022.

Legend: HTN (Hypertension), DM (Diabetes Mellitus), IHD (Ischemic Heart Disease), Bronchial Asthma (BA), COPD (Chronic Obstructive Pulmonary Disease).

Table 3 shows the factors related to clinical characteristics, where neither the type of infection, nor the duration of symptoms, nor the severity of the condition constituted risk factors related to the appearance of post-COVID-19 syndrome, being highly significant.

	CASOS N=100		CONTROLES N=200		OR	IC	X2
Variables	**No**	**%**	**No**	**%**			
Tipo de infecciòn							
Leve	95	95,0	200	100,0	0,00	0,00-0,02	0,18 (P<0,001)
Severa o Crítica	5	5,0	0	0,0			
Duraciòn de los síntomas							
< 12 semanas	2	2,0	170	85,0			
>12 semanas	98	98,0	30	15,0	0,00	0,00-2,02	187,75 (P<0,001)
Gravedad del cuadro							
< 5 síntomas	50	50,0	170	85,0			
> 5 síntomas	50	50,0	30	0,18	0,18	0,10-0,31	41,76 (P<0,001)

Table 3: Factors related to clinical characteristics. Turcios Lima Polyclinic. Year 2022.

Table 4 shows the factors related to medical management, where the need for medical treatment and ventilatory support through oxygen therapy constituted risk factors associated with the development of post-COVID-19 syndrome, increasing the risk by more than five times (OR=5.35), (CI 1.82-15.55), (P<0.001). Both factors showed very similar behavior and were highly statistically significant.

	CASOS N=100		CONTROLES N=200		OR	IC	X2
Variables	**No**	**%**	**No**	**%**			
Ingreso hospital							
Si	32	32,0	25	12,5	0,30	0,17-0,55	16,47 (P<0,001)
No	68	68,0	175	87,5			
Tratamiento farmacológico							
Si	12	12,0	5	5,0	5,35	1,82-15,55	11,26 (P<0,001)
No	88	88,0	195	97,5			

Soporte ventilatorio							
Si	12	12,0	5	5,0	5,35	1,82-15,55	11,26 (P<0,001)
No	88	88,0	195	97,5			

Tabla 4: Factors related to medical management. Turcios Lima Polyclinic. Year 2022.

Table 5 shows the factors related to clinical evolution, where the presence of established sequelae and developed complications constituted risk factors associated with the appearance of post-COVID-19 syndrome, increasing the risk by more than 14 times in the first case (OR=14.08), (CI 7.63-25.97), (P<0.001) and by more than 12 times in the second (OR=12.32), (CI 4.53-33.45), (P<0.001), both being highly significant.

	CASOS N=100		**CONTROLES N=200**		**OR**	**IC**	**X2**
Variables	**No**	**%**	**No**	**%**			
Complicaciones							
Si	24	24,0	5	5,0	12,32	4,53-33,45	35,29 (P<0,001)
No	76	76,0	195	97,5			
Secuelas							
Si	61	61,0	20	10,0	14,08	7,63-25,97	87,98 (P<0,001)
No	39	39,0	180	90,0			

Tabla 5: Factors related to clinical evolution. Turcios Lima Polyclinic. Year 2022.

Discussion

The reviewed literature suggests that age ≥ 50 years was associated with lower quality of life, persistence of symptoms, and a lower frequency of olfactory dysfunction. Likewise, as age increased, an increased risk of deterioration in functional status, measured using the post-COVID-19 functional status scale, was observed. The presence of post-COVID-19 syndrome is higher in females (56.3%) compared to males (45.5%). The severity of the initial presentation was statistically significantly associated with respiratory symptoms. Urban residence and occupation (studying or working) are proven risk factors related to acute COVID-19 infection, but there is no evidence that they are related to post-COVID-19 syndrome. 1-3 Apparently, in this study, these were the patients who coincidentally attended the multidisciplinary convalescent clinic for this disease in the health area most frequently.

In the present study, female sex constituted a risk factor related to the appearance of post-COVID-19 syndrome, which is consistent with what has been reported by several authors. 4-6

Identified risk factors for post-COVID-19 syndrome include comorbidities (asthma or chronic obstructive pulmonary disease (COPD), obesity, and increased body mass index). Diabetes mellitus, hypertension, cancer, and immunosuppression are risk factors for severity and mortality in the acute phase of COVID-19; however, there is no evidence of their association with post-COVID-19 syndrome. The comorbidities associated with the disease must be considered in relation to the prevalence of these pathologies in the population. Hypertension, liver diseases, chronic kidney disease, and immunosuppression have been recognized as important factors associated with poor disease outcomes. In published series of hospitalized cases, the presence of comorbidities ranged from 23.2% to 51%. 4-6

Having a previous diagnosis of psychiatric illness was significantly associated with the persistence of depressive symptoms. Likewise, having two or more comorbidities were risk factors for the persistence of symptoms during post-COVID follow-up. In this study, the presence of associated comorbidities: diabetes mellitus, bronchial asthma, COPD, ischemic heart disease, and hypertension, constituted risk factors related to the appearance of post-COVID-19 syndrome, which is consistent with what has been reported by other authors. 7-9

As a general concept, it is accepted that all patients who suffer from COVID-19 infection, whether asymptomatic, mild, moderate, severe, or critical, are potentially candidates for developing a post-COVID syndrome and more specifically Long COVID, Persistent COVID, or Long-COVID. Conversely, for the development of established complications and sequelae, those with moderate, severe, or critical acute COVID-19 cases requiring hospitalization are considered at risk. 7-9

Some phenotypes have been described, and it is necessary to recognize them in clinical practice for early diagnosis and management, in order to reduce the risk of morbidity, mortality, or disability. The first is post-COVID-19 tachycardic syndrome, in which palpitations occur in approximately 50% of patients. Another phenotype is the classification of the duration or onset of symptoms, which can categorize patients as acute (4-12 weeks) and subacute (> 12 weeks). 7-9

Persistent symptoms after suffering from COVID-19 have been identified in a large majority of patients, and studies indicate a wide variation in their frequency, ranging from 40 to 90%. The coexistence of more than 5 symptoms during the first 7 days of the onset of the clinical picture of COVID-19 increases the risk of developing a post-COVID syndrome by 3.5 times. The 5 symptoms experienced in the first week of acute COVID-19 infection that had the greatest predictive value for the development of post-COVID-19 syndrome were: fatigue, headache, dyspnea, dysphonia, and myalgia. 7-9

Fatigue is the most common symptom of post-COVID-19 syndrome. The approach to the patient with fatigue is primarily clinical, so the use of paraclinical studies should be minimal, limited to ruling out other causes. If the initial assessment suggests a specific differential diagnosis, it will be justified to request targeted additional tests. A high index of suspicion for systemic exertion intolerance disease (SEID) should be maintained when approaching a patient with chronic fatigue.7-9

Post-COVID Syndrome can give rise to more than 50 symptoms, which present in multiple forms in most cases. This syndrome affects both hospitalized patients and patients who received home care; that is, there is evidence that it can occur in both groups.

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