ARTÍCULO ORIGINAL

Clinical-epidemiological characterization of confirmed COVID-19 patients in Pinar del Río

Caracterización clínico-epidemiológica de los pacientes confirmados con la COVID-19 en Pinar del Río

Martha Beatriz Cuello-Carballo[1], Humbelina Díaz-Alfonso[1], Juan Eloy Cruz-Quesada[1] Heidy Liana Carbó-Rodríquez[1], Daniesky Dopico-Ravelo[1]

[1]Pinar del Rio University of Medical Sciences. Dr. Leon Cuervo Rubio Provincial clinical-surgical-teaching Hospital. Pinar del Rio. Cuba

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ABSTRACT

Introduction: the study of the characteristics of COVID-19 patients allows the determination of risk groups and specific populations and the strategies designed by the institutions to deal with this situation.
Objective: to characterize clinical and epidemiologically the confirmed COVID-19 patients in Pinar del Río.
Methods: an observational, descriptive, longitudinal and prospective study including the 52 confirmed cases of COVID-19 between March and May 2020 was conducted. Data were collected from clinical records and epidemiological surveys. Descriptive statistics was used.
Results: the age group between 40 and 59 years old predominated (rate of 8,2 per 10 thousand inhabitants), with predominance of male sex (rate of 0,8 per 10 thousand inhabitants). The 94,2 % of the patients presented a precise source of infection at the time of admission. The most frequent symptoms were fever (51,9 %), cough (40,4 %) and rhinorrhea (21,1 %). High blood pressure was present in 11,11 % of the patients, where 35,7 % of hypertensive patients developed acute inflammatory pneumopathy; 86,5 % of the patients were discharged from hospital after 14 days and 96,2 % were epidemiologically discharged after 28 days.
Conclusions: transmission was mostly autochthonous, less asymptomatic, where fever and cough were the main symptoms. Patients with comorbidities developed more complications. A positive response to treatment was found, achieving high percentages of clinical and epidemiological discharge at 14 and 28 days respectively.

Keywords: Communicable Diseases; Pandemic; Coronavirus; Adult; Clinical Evolution; Secondary Care.

RESUMEN

Introducción: el estudio de las características de los pacientes con la COVID-19 permite determinar grupos de riesgo en poblaciones específicas y trazar estrategias por las instituciones para enfrentar dicha situación.
Objetivo: caracterizar clínico-epidemiológicamente a pacientes confirmados con la COVID-19 en Pinar del Río.
Métodos: se realizó un estudio observacional, descriptivo, longitudinal y prospectivo en los 52 casos con diagnóstico confirmado a la COVID-19 entre marzo y mayo de 2020. Los datos fueron recogidos de las historias clínicas y las encuestas epidemiológicas. Se empleó estadística descriptiva.
Resultados: predominó el grupo etario entre 40 y 59 años (tasa de 8,2 por cada 10 mil habitantes), con predominio del sexo masculino (tasa de 0,8 por cada 10 mil habitantes). El 94,2 % de los pacientes presentaron fuente de infección precisada al momento del ingreso. Los síntomas más frecuentes fueron la fiebre (51,9 %), tos (40,4 %) y rinorrea (21,1 %). La hipertensión arterial se presentó en el 11,11 % de los pacientes, donde el 35,7 % de los pacientes hipertensos desarrollaron neumopatía aguda inflamatoria. En el 86,5 % de los pacientes se realizó alta clínica a los 14 días y el 96,2 % alta epidemiológica a los 28 días.
Conclusiones: la transmisión fue mayormente autóctona, menormente asintomática, donde la fiebre y la tos fueron los principales síntomas. Los pacientes con comorbilidades desarrollaron en mayor cuantía, complicaciones. Se encontró una respuesta positiva al tratamiento con altos porcentajes de alta clínica y epidemiológica a los 14 y 28 días respectivamente.

Palabras clave: Enfermedad Infecciosa/Epidemiología; Pandemia; Coronavirus; Covid-19; Adulto; Evolución Clínica; Atención Secundaria De Salud.

INTRODUCCIÓN

Epidemics and pandemics are naturally occurring events. The emergence of a new infectious disease is always a complex situation, especially if it occurs as an epidemic of significant extent or severity. According to the World Health Organization (WHO), viral diseases continue to emerge and represent a serious public health problem. This is compounded by the fact that each new outbreak has the potential to affect geopolitical and financial relations, not only because of the loss of lives but also by disrupting trade and economic productivity from the national to the global level.[1]

On December 31, 2019, health authorities in the city of Wuhan, Hubei Province, China reported 27 cases of acute respiratory syndrome of unknown etiology, establishing a link with a seafood and animal market. On January 7, 2020, Chinese authorities reported the presence of a new coronavirus, *Severe Acute Respiratory Syndrome Coronavirus 2* (SARS-CoV-2), identified as a possible etiology of the syndrome.[2]

Due to the significant increase in confirmed SARS-CoV-2 cases, on March 11, 2020, World Health Organization (WHO) authorities declared this health emergency a pandemic. The disease was named COVID-19 (Coronavirus disease 2019), and medical reports warned of a

strong pneumonic respiratory involvement among all the various symptoms presented by the patients.[2]

COVID-19 is the third zoonotic disease caused by coronaviruses as it is known, since the *Severe Acute Respiratory Syndrome Coronavirus* (SARS-CoV) and *Mid East Respiratory Syndrome Coronavirus* (MERS-CoV) were previously present.

The virus has been found to affect older adults, people who are immunosuppressed or have comorbidities (diabetes mellitus, hypertension, bronchial asthma, ischemic heart disease) more frequently. The most severe forms occur in 5 % of patients, with respiratory function impairment, requiring ventilatory support. In the same way, the syndrome of systemic inflammatory response is described with probabilities of manifestation of septic shock and multiple organ failure, as well as a high mortality rate. However, it has been exposed that about 80 % of the infected people go through the disease without developing complications [3].

In the hospital, the care of confirmed positive COVID-19 patient involves epidemiological, clinical and laboratory criteria for diagnosis. The admission of 100 % of the patients is done following the issued guidelines for the management of these patients and the definition case proposed by the WHO is based on the positivity of the specific test of polymerase chain reaction (PCR).[3]

The country's government direction has carried out measures of great magnitude, in coordination with the Ministry of Public Health, the Civil Defense and other entities, which is materialized in the Prevention and Control Plan of the new Coronavirus (COVID-19). This plan involves all agencies of the Central State Administration, non-state sector along with the general population and was taken to the real conditions of each territory.[2]

The present study is aimed at characterizing clinical and epidemiologically confirmed positive COVID-19 patients in Pinar del Río

METHODS

An observational, descriptive, longitudinal and prospective study was carried out on confirmed patients by means of SARS-CoV-2 real-time PCR method, admitted to Dr. Leon Cuervo Rubio Provincial clinical-surgical-teaching Hospital. in Pinar del Río province, between March and May 2020. The study population comprised 52 patients with positive PCR-TR diagnosis for SARS-CoV-2, working with all them.

The information was obtained through the review of clinical histories and epidemiological surveys. The data obtained was stored in an Excel database and processed in the EpInfo statistical system. Descriptive statistics were used for data analysis.

The confidentiality of the patients' personal data was maintained, meeting the principles of autonomy, respect for people and keeping in mind the principle of beneficence and non-malfeasance when conducting this research. The basic principles of the Declaration of Helsinki, which contains recommendations to be followed in biomedical research on human beings, were respected. The informed consent of the patients was requested. In addition, the Ethics and Scientific Committee of the institution approved the project.

RESULTS

The age group between 40 and 59 years showed a rate of 8,2 per 10 thousand inhabitants. The disease was more prevalent among men, with a rate of 0,8 per 10,000 inhabitants (Table 1).

Table 1. Distribution of confirmed COVID-19 patients in Pinar del Río, according to age groups and sex, March-May 2020

Age (years)	Female		Male		Total	
	No.	Rate*	No.	Rate*	No.	Rate*
0-19	6	1,0	9	1,3	15	1,2
20-39	7	1,0	8	1,0	15	1
40-59	11	1,2	4	0,4	15	8,2
60 - older	4	7,7	3	0,5	7	0,6
Total	28	0,6	24	0,8	52	0,9

Source: epidemiological surveys.
*Incidence rate per 10 thousand inhabitants.

The source of infection was specified in 94,2 % of the patients, where 85 % were autochthonous (table 2).

Table 2. Identification of the source of infection in positive COVID-19 patients.

Source of infection	No.	%
Specified	49	94,2
Imported	7	14,3
Autochthonous	42	85,7
Not specified	3	5,8
Total	52	100

Source: Epidemiological surveys.

The most frequent symptoms found were fever (51,9 %) and cough (40,4 %). The 38,5 % of the patients diagnosed were asymptomatic at the time of admission (Table 3).

Table 3. Characterization of clinical signs and symptoms in patients diagnosed with COVID-19.

Clinical signs and symptoms	No.	%
Fever	27	51,9
Cough	21	40,4
Expectoration	7	13,5
Rhinorrhea	11	21,1
Odynophagia	10	19,2
Headache	7	13,5
Diarrhea	6	11,5
Asymptomatic at admission	20	38,5

Source: medical records.

Acute inflammatory pneumopathy was present in 28,8 % of the patients and 1,9 % experienced hypoglycemia as complications. High blood pressure was present in 11,54 % of the patients. Hypertensive patients represented 83,33 %, and 100 % of asthmatics and patients with hyperthyroidism developed acute inflammatory pneumopathy (Table 4).

Table 4. Impact of chronic non-communicable diseases on the presence of complications in COVID-19 patients.

Chronic Non-communicable Diseases	Acute Inflammatory Pneumopathy (n=14)		Hypoglycemia (n=1)		Total	
	No.	%	No.	%	No.	%
Hypertension	5	83,33	1	16,67	6	11,54
Bronchial asthma	4	100	0	0	4	7,69
Hypothyroid	3	100	0	0	3	5,77
Diabetes mellitus	1	50	1	50	2	3,85
COPD	1	50	1	50	2	3,85
CVA	1	100	0	0	1	1,92

Source: Epidemiological surveys.

The 86.5% of the patients were discharged from the hospital after 14 days, showing a favorable response to the treatment, while 96,2% were discharged after 28 days (Table 5).

Table 5. Evaluation of the response to treatment in relation to the clinical discharge in COVID-19 patients.

Response to treatment	Clinical discharge				Epidemiological discharge			
	Positive PCR at 14 days		Negative PCR at 14 days		Positive PCR at 28 days		Negative PCR at 28 days	
	No.	%	No.	%	No.	%	No.	%
Favorable	0	0	45	86,5	0	0	50	96,2
Unfavorable	7	13,5	0	0	2	3,8	0	0

Source: Medical records and epidemiological surveys.

DISCUSSION

Cases reported with COVID-19 vary depending on the country, the prevailing socio-economic system, and the political will of governments to deal with this pandemic. Thanks to the existing technologies, and the will of the scientific network, real-time monitoring has been achieved. (4)

Both the report of the National Center of Epidemiology of Spain (5) and the research carried out by Guzmán Del Giudicey col. (6) show coincidences with what is presented in this study, with regard to the higher incidence of the disease in male sex; although in the latter it is specified that this was predominant at the beginning of the pandemic to later vary the proportion in favor of female gender. However, it is suggested that the scarcity of information by gender limits theorizing about the probabilities of association between sex and susceptibility to the virus. (7)

The study carried out by Ferrer Castro et al. (8) showed that 79.7% of patients with COVID-19 had autochthonous transmission as a source of infection, which coincides with the present one. However, a study carried out in Peru found that a predominance of COVID-19 patients corresponded to imported cases.(6) When it is not possible to specify the source of infection, it is impossible to establish a direct link with travelers, foreigners from risk areas or other confirmed cases, which means that focus control actions are not always effective.

In the study of Acosta et al. (9), the predominant clinical manifestations were cough (82,4 %), fever (76,5 %) and dyspnea (76,5 %), coinciding to a great extent with what has been reported in the present. Castro Ferrer (8) in his study refers to the presence of fever and cough followed by shortness of breath and headache. The Spanish Society of Medicine and Community Family, (10) stated that the signs and symptoms are very unspecific, showing fever, cough, dyspnea, anorexia, general malaise and myalgia. More rarely sore throat, nasal congestion, headache, nausea or diarrhea. Elderly and immunosuppressed people may have atypical signs and symptoms.

In Japan, about 50 % of the cases were asymptomatic, with great involvement in the maintenance of viral transmission in the community, higher results to those reported in this research. (11)

Silent or asymptomatic transmission makes the scenario more complex, since it implies more energetic strategies of research and containment of contagion, as well as greater social isolation among citizens. The first case of asymptomatic transmission reported in Wuhan [12] infected five of his/her relatives.

The diagnosis cannot be only clinical, hence the importance of the classification of the patient taking into account the epidemiological background he or she has. This coincides with the opinion of experts who reaffirm the variability in the frequency of presentation of the clinical picture and the diagnostic confirmation by the result of the RT- PCR.[3]

A positive real-time PCR test has been accepted as the "gold standard", even though there have been controversies about the most convenient times to perform it, its sensitivity and specificity, and other factors that may affect its quality. RT-PCR represents a useful test from the epidemiological point of view to identify epidemics, but it is expensive and has not been routinely available for individual case diagnosis in everyday medical care in most countries after the causal virus is known.[3]

From the experience internationally accumulated and in Cuba, it is known that in a group of sick people, coronavirus is manifested as a pneumonia, but only a small proportion of them (between 5 % and 15 %) present a serious phase. This serious phase can reach the worsening of its symptoms toward a progressive acute respiratory insufficiency, with different alterations in organs and systems. [13, 14]

This is due to the fact that this small group of patients suffers from a generalized inflammatory state produced by the cytokine storm that conditions in them a high thrombotic risk. These complications occur with greater incidence in the elderly, patients with chronic non-communicable diseases, as well as others who present comorbidities related to a deregulation of the immune system and other clinical conditions [7, 10, 13]

CONCLUSIONS

It is concluded that in Pinar del Río province the transmission was mostly autochthonous, where fever and cough were the main symptoms. Patients with comorbidities developed more complications. It was found a positive response to treatment achieving high percentages of clinical and epidemiological discharge at 14 and 28 days respectively.

Conflict of interest

The authors declare that there is no conflict of interest for the publication of the article.

Authorship contribution

MBCC was in charge of the conceptualization, administration of the Project, investigation, formal analysis and resources. MBCC and HDA participated in the writing of the initial draft. The authors participated in the revision and edition of the manuscript and the approved final version.

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