Clinical epidemiological characterization of COVID-19 positive patients in an isolation center in Cienfuegos, Cuba

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ABSTRACT

In December 2019, the World Health Organization (WHO) was notified of cases of pneumonia of unknown cause detected in Wuhan City, China. Authorities subsequently identified a new coronavirus (SARS-CoV-2) as the causative agent of this disease COVID-19 (WHO, 2020a). The WHO declared this pathology as a global...
public health emergency on January 30, 2020; approximately one month later, the first case was reported in Latin America (Sánchez et al., 2020; WHO, 2021a).

The pandemic of the new coronavirus can be considered unprecedented (Freeman and Robbins, 2020; Horton, 2020). It has generated a global state of alert, leaving the world in suspense (Osés et al., 2020; Wu and Mc. Googan, 2020; Zhen, 2020). Beyond all the macro dimensions, it is an event of maximum extension and implications that has changed the routines and daily life of every human being on the planet, with multiple impacts for the future (Horton, 2020; Osés et al., 2020). It is safe to say that the COVID-19 pandemic is a pandemic of paradoxes, which differentially affected socio-economic groups at all levels, where the wasted opportunity of great world powers, who had everything, but lost control of the pandemic (Horton, 2020).

Among the measures implemented by the Ministries of Public Health from the social point of view, the physical distancing between people (the so-called social distancing), partial or total, are fundamental to mitigate the pandemic and whose implementation was carried out differently in the world (Wu and Mc. Googan, 2020; Breno and Geoffrey, 2020; Torres et al., 2022). The effectiveness of distancing people from each other in reducing the basic number of reproductions of an infection is well known in the epidemiological field. In this sense, the coronavirus crisis may have been a turning point in the familiarity of the population with these protective measures (Oltra, 2020).

The first case in the Region of the Americas was confirmed in the United States on January 20, 2020, and Brazil reported the first case in Latin America and the Caribbean on February 26, 2020. Since then, COVID-19 has spread to all 54 countries and territories in the Region of the Americas (WHO, 2020a; WHO, 2021a; WHO, 2020b). The first cases reported in Central America were diagnosed on March 9 (SICA, 2020a). On March 14, the SICA member countries signed the Declaration of the Heads of State and Government of Belize, Costa Rica, Guatemala, Honduras, Nicaragua, Panama and the Dominican Republic in response to the COVID-19 (SICA, 2020b) pandemic. Between March and June 2020, 32,239 confirmed cases were reported, representing 0.06% of its population of 49,523,106 inhabitants (SICA, 2020c). In Cuba, the first case was diagnosed on March 11, 2020. The Ministry of Public Health reported on three tourists from Italy who were in the city of Trinidad and after three days of stay in the country presented respiratory symptoms (MINSAP, 2016).

In the province of Cienfuegos, the accumulated number of confirmed cases amounted to 4,294 since the beginning of the epidemic on March 21, 2020. The first positive case was reported from a Croatian tourist passing through the capital city. Of these, 249 imported from: United States (71), Venezuela (23), Mexico (14), Panama (8), Canada (6), Spain (5), Russia (98), Colombia (3), Italy (4), India (2), Argentina, Croatia, Bolivia, Honduras, Dominican Republic, Brazil, Chile, Greece, Namibia, Ecuador, Bahamas and Uruguay with 1 case respectively, and 4,045 autochthonous. The cumulative incidence rate was 1054.5 x 100,000 inhabitants, and 224.2 x 100,000 inhabitants in the last 15 days (Chaviano, 2021).

Due to the above mentioned in the province, it was decided by the National Defense Council to open the Isolation Center in the Medical Sciences Branch, so the objective of this research was to clinically and epidemiologically characterize the COVID-19 positive patients in the Isolation Center of the Cienfuegos Medical Sciences Branch during the First Semester of 2021.
Analysis of positive cases by month

When analyzing the COVID-19 positive cases according to months, it was observed that 40.7% were diagnosed in the month of June, and 20.3% in the month of January when the first patients were admitted to the center. The average monthly number of cases was 27.83 with a standard deviation of 21.06, and the linear trend according to the moving average was upward (Figure 1).

![Figure 1. Results of the Trend Analysis.](image)

Source: Epidemiological Survey

Sex and age

In relation to sex and age, females accounted for 74.2% of the total number of cases and young adult patients (25-49 years) accounted for 25.7%, followed by older adults (60 years and over), with 19.1%. The underlying disease in 29.4% of the cases was HT, followed by diabetes mellitus and ischemic heart disease, with 24.3% and 17.6%, respectively. The smallest number of cases corresponded to three patients with dementia, representing 2.5%.

Main symptoms and comorbidities

Taking into account the timeliness and promptness of admission of positive cases to isolation centers, 49.7% were admitted within 5 to 7 days after contact with other positive cases, although 31.7% were admitted more than 7 days after contact. The patients studied presented various symptoms compatible with COVID-19, where 46.9% reported cough, 43.3% fever and 41.6% anosmia and/or ageusia. Of the cases, 80.9% lived in Cienfuegos, followed by the municipality of Lajas, with 5.1%, while the lowest number of cases corresponded to the municipality of Aguda of Pasajeros, with 0.9%.

People over 60 years of age and those with underlying medical conditions, such as hypertension, heart or lung problems, diabetes, obesity or cancer, are at a higher risk of presenting severe cases (WHO, 2021a; WHO, 2021b). This study showed that those over 15 years of age were those who became sick more often, which could be due to the greater number of patients in this age group, and the more asymptomatic presentation of the disease in infants in this period of time analyzed; therefore, the identification of comorbidities associated with the severe clinical presentation of COVID-19 is important for the appropriate therapeutic approach to affected patients.
The significant transmissibility of this new coronavirus and the high mortality associated with COVID-19, in addition to the lack of curative treatment, have made this disease a serious health problem worldwide. The most commonly reported symptoms of COVID-19 are fever, dry cough, myalgia, fatigue and dyspnea. Other symptoms associated with the disease are headaches, diarrhea and hemoptysis. Although the characteristic set of symptoms of COVID-19 has not been fully defined, the clinical presentation is known to be highly variable, ranging from mild to severe forms. In fact, it has been reported that 25.9% of patients with COVID-19 require admission to Intensive Care Units, and 20.1% develop Acute Respiratory Distress Syndrome, as an expression of severe forms of the disease (Khan et al., 2020; WHO, 2020c; WHO, 2021a; WHO, 2021b). The aforementioned symptomatology coincides with that presented in patients in the isolation center, where anosmia and/or ageusia were also frequent.

Isolation

Isolation refers to the physical separation of infected persons from those who are healthy. This measure is effective when there has been an early detection of the disease and the infected person is isolated in a specific space, avoiding contact with others. Isolation is given when the contagion has been confirmed. In Cuba, since January 2020, a national strategy was designed to deal with COVID-19, involving State agencies, companies, the non-State sector and the population in general, which made possible the hospital isolation of cases positive for the disease (MINSAP, 2020; Sánchez et al., 2020).

It is important to add that the period in which a case can transmit the infection to another person can be inferred by detecting viable virus in clinical samples. The real-time PCR technique has been widely used throughout the pandemic because of its ability to detect viral RNA load over very long periods. Using this technique, it has been observed that infected patients mostly present a high viral load before the onset of symptoms, and in the first days of clinical onset (5th-6th day) and practically disappears by the 10th day (MINSAP, 2020). For this reason, isolation should be performed within ten days of contact with a positive case and effectively between the 5th and 7th day. It is evident from the study that despite the efforts made by the State authorities, not all patients were isolated promptly and in a timely manner, thus allowing contagion in the community.

The impressive increase in the number of countries that have taken social protection measures to respond to the socio-economic challenges brought about by the COVID-19 pandemic represents a good opportunity to fill existing gaps in coverage systems. This would be possible if some of these measures cease to be exclusive responses to the crisis, and become part of a systematic strategy. On the other hand, the pandemic has also had the effect of exacerbating previous obstacles to the inclusion of the rural population. As in the past, meeting the needs of rural populations in the future will require innovative and adaptable social protection strategies (Campora, 2020).

For the poorest and most vulnerable population groups in rural areas, establishing measures to contain the negative effects of COVID-19 is particularly difficult because their livelihoods depend to a large extent on food systems, which have been greatly affected. In rural areas, informal work is very common, especially among women, and is closely correlated with poverty. In order to earn a living, a large part of the world's
rural populations need to be able to move around and need access to public spaces (Campora, 2020). This is not the case in Cuba, where pandemic control measures are equally triggered in any locality. The patients admitted to the isolation center came from the eight municipalities of the province, from where they have been referred after comprehensive outbreak control actions were carried out and it was decided to transfer and admit them.

The COVID-19 pandemic has posed an unprecedented challenge for the National Health System in Cuba, where the care model implemented proposed to hospitalize all patients diagnosed with COVID-19 regardless of whether they had symptoms or not. The risk of presenting dangerous symptoms increases with age, and those older than 85 years are at a higher risk of having serious symptoms, these risks being much higher for older people when they have other medical conditions.

The limitations of the research were related to the retrospective nature of the data collection, so that only the data considered pertinent, and which were recorded in the database from the epidemiological survey, were known. The results of the research may differ from data reported in other countries, due to the fact that there were no admissions to isolation centers as was done in Cuba. The characteristics of the epidemic in Cuba had a notable influence on the results found.

Conclusions

The results obtained in the clinical epidemiological characterization of COVID 19 positive patients at the Medical Sciences Isolation Center in the province of Cienfuegos in the first semester of 2021, show that patients over 15 years of age and of the female sex predominated, where AHT, Diabetes Mellitus and Ischemic Heart Disease were the most frequent comorbidities in patients.

The focus control actions in the community carried out in a timely manner allowed mitigating the impact of the pandemic, thus avoiding much more serious complications and reducing the number of deaths; reaffirming once again that COVID-19 is a pandemic of paradoxes, which had and will continue to have a marked international effect.

Conflict of interest

The authors declare that they have no conflict of interest.

References


