Epidemiological and Health Sciences
Case Presentation

COVID-19 and the problem of the times in the control strategies

**COVID-19 y el problema de los tiempos en las estrategias de control**

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How to cite this article


Revised: April 21\(^{st}\), 2020.
Approved: April 29\(^{th}\), 2020.

Abstract

**Introduction:** In the process of caring for patients with suspected coronavirus infection (COVID-19), elements that must be considered in transmission prevention strategies are included.

**Objective:** To describe, based on the presentation of a case confirmed with COVID-19, the chronology of patients suspected or confirmed with the disease and the need to optimize diagnosis times in the transmission prevention.

**Case presentation:** Fifty-nine-year-old male patient with a history of high blood pressure and gout, working as a taxi driver. Seven days before admission, he began with symptoms. A rapid test for COVID-19 was performed, which was negative. On the fifth day of isolation in a private...
room, PCR was performed and coronavirus infection was confirmed. He was moved to an institution dedicated to the care of these patients where he recovered without complications. Time intervals concerning care are described with special emphasis on diagnostic delay.

**Conclusion:** Monitoring of the care dynamics of patients suspected of COVID-19 is required with a special focus on strengthening the prevention of nosocomial transmission and the prevention of the spreading of the disease in the community.

**Keywords:** coronavirus, COVID-19, diagnosis delay, prevention, transmission.

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**INTRODUCTION**

The control of epidemics related to respiratory viruses in the community requires the use of the best epidemiological technologies, despite which the possibility of their control is less compared to other viral or bacterial infections. During the current coronavirus-related pandemic (COVID-19), prevention and control methods already used during the epidemic of the severe acute respiratory syndrome (SARS) which developed in China during the years 2002-2003 have been used, even when social isolation measures and the influence of the media on the education of the population have been more reinforced.\(^{(1,2)}\)

The possibility of controlling infectious disease epidemics depends on multiple factors related to health systems and patients. Consideration should be given to the effect of the organization of health systems and the resources available to
face epidemics, which in the present epidemic, have been overwhelmed worldwide.\textsuperscript{(3)} Among the basic strategies for the control of COVID-19 is the early diagnosis and isolation of patients suspected or confirmed with the disease and follow-up of contacts. In this strategy, the early assistance of symptomatic patients to the health system or detection through screening the population is of cardinal importance. Consequently, patients identified as suspects should be promptly isolated and studied by performing the recommended diagnostic tests.\textsuperscript{(4)}

The delay in the diagnosis of the suspicion or confirmation of infectious diseases has an impact on the effectiveness of control actions and the results of medical care. This has been extensively studied for other diseases such as tuberculosis or influenza.\textsuperscript{(5,6,7)}

The objective of this research is to describe, based on the presentation of a case confirmed with COVID-19, the chronology of the patient suspected or confirmed with the disease and the need to optimize diagnosis times for the disease prevention strategies.

\textbf{CASE PRESENTATION}

A 59-year-old male patient who works as a taxi driver presents with a history of high blood pressure and gout. The patient reports that he frequently carries passengers from different origins and does not define contact with an individual identified as suspected or confirmed of COVID-19.

Seven days before medical care he started with general discomfort, joint pain, anorexia, and fever of 38-38.5 degrees Celsius. The last two days, he reported a rash on the upper limbs and face. He was admitted to rule out Dengue fever although, early during the care the presence of respiratory infection and radiological findings suggestive of pneumonia were identified. The patient is kept in isolation in a private room from the moment of admission.

Upon admission, a rapid test was performed for COVID-19, which was negative, and on the fifth day of the stay, a PCR was performed for COVID-19, which was positive. In compliance with the protocol, the patient is referred to an institution dedicated to the care of cases with COVID-19 on day seven of stay, where the patient recovered without presenting major complications associated with the disease.

The figure describes the chronology of patients suspected of COVID-19. In summary, the following components or time intervals are described in the patient process of care:

- Time between probable infectious contact and the appearance of clinical symptoms (incubation period): Not known.
- Time between the appearance of symptoms and admission to isolation (total diagnostic delay): The time between the appearance of symptoms and admission to isolation (total diagnostic delay):
DISCUSSION

From the observation of the patient, we have described fundamental elements of care for patients suspected of COVID-19 and we have found some distinctive aspects related to the risk of community or nosocomial transmission that must be considered.

The component of the patient in the diagnosis delay of infectious diseases and the delay in confirming the diagnosis of COVID-19 by performing the appropriate laboratory test are highlighted. The first defines the period of the risk of community transmission that includes the symptomatic period and days before it. The risk of nosocomial transmission is dependent not only on the performance of the specific diagnostic test but also on compliance with isolation precautions by personnel in direct contact with the patient. In cases of COVID-19, the application of droplets precautions combined with contact precautions is recommended.\(^{(8)}\) Besides, during the performance of aerosol-generating procedures (endotracheal intubation, aspiration, nasopharyngeal exudate, surgery, endoscopic procedures), the application of airborne precautions is recommended.\(^{(8)}\)

Although there are no specific standards to assess the indicators related to the times described above, it is important to consider that the risk of transmission increases, at least proportionally, with the days of delay in
diagnosis. The measurement of the aforementioned (and other specific) time intervals in suspected patients and their monitoring through indicators can contribute to improving the dynamics of the processes and controlling the risks of transmission.

Delay in diagnosis and laboratory confirmation is related to unwanted health care outcomes, including increased mortality, delayed clinical recovery, and increased risk of transmission, among others.\(^6\)\(^7\) The diagnostic delay attributed to the patient constitutes the critical period of the risk of community transmission, which can be reduced through effective actions of education to the population and screening of respiratory symptoms at the community level. The diagnostic delay attributed to the health system is related to the risk of community transmission and must be controlled through the education of health workers and the monitoring of medical care for acute respiratory infections.

About the performance of the diagnostic test, in this case, the performance of the rapid test may be considered appropriate, even though on the seventh day after the onset of symptoms (time the patient was present) 50 % of the patients showed total antibody levels (IgM or IgG) detectable by this test. Taking into account the limitations of the rapid test, the patient would require PCR to identify the viral RNA as soon as infection by the SARS-CoV-2 virus is suspected.\(^9\)

The patient we have described presented skin rash, which made us to rule out dengue fever, a clinical finding that has been reported in cases of COVID-19.\(^10\)\(^11\) The coexistence of Dengue and COVID-19 constitutes a challenge for the country’s health system, and the countries endemic for this arbovirus, if we take into account the similarities of the clinical presentation and the potential complications that require differentiated management.\(^12\)\(^13\)

Also, the precautions for the prevention of nosocomial transmission, mainly for cases of COVID-19, have significant differences with other diseases transmitted by vectors, either by contact or by small respiratory particles. Educational actions focused on health personnel and the review of diagnostic protocols should be evaluated in the future.

**CONCLUSIONS**

In conclusion, given the continuous improvement of quality, monitoring of the care of patients suspected of COVID-19 is required with a special focus on strengthening the prevention of nosocomial transmission and the prevention of the spreading of the disease in the community.

**REFERENCES**

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Conflict of interest
The authors have no conflict of interest to declare

Contribución de los autores
HGG: Writing of the final version.
AGV: Information collection, review and approval of the manuscript.
LGA: Information collection, review and approval of the manuscript.

All the authors participated in the discussion of the results and have read, reviewed and approved the final version of the article