Revista Habanera de Ciencias Médicas

YEAR 2020
19 (SUPPLEMENT)
ISSN 1729 - 519X

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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
Guanche Garcell H, González Valdés A, González Álvarez L. COVID-19 and the problem of the times in the control strategies. Rev haban cienc méd [Internet]. 2020 [cited]; 19(Suppl.):e3318. Available from: http://www.revhabanera.sld.cu/index.php/rhab/article/view/3318

Received: April 21st, 2020.
Approved: April 29th, 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.

RESUMEN

Introducción: En el proceso de cuidados de paciente con sospecha de infección por el nuevo coronavirus (COVID-19) se incluyen elementos que deben ser considerados en las estrategias de prevención de la transmisión.
Objetivo: Describir, a partir de la presentación de un caso confirmado con COVID-19, la cronología de los cuidados del paciente sospechoso o confirmado con la enfermedad y la necesidad de optimizar los tiempos de diagnóstico en la prevención de su transmisión.
Presentación de caso: Paciente masculino de 59 años de edad con antecedentes de Hipertensión arterial y gota, y de profesión taxista. Siete días anteriores al ingreso comienza con los síntomas clínicos y se le realiza prueba rápida para COVID-19, la cual resultó negativa. Al quinto día de ingreso de aislamiento en habitación privada se le realiza PCR y se confirma la infección por coronavirus. Se traslada a institución dedicada a la atención de estos pacientes donde presenta recuperación sin complicaciones. Se describen los intervalos de tiempo en relación con los cuidados en especial énfasis a la demora diagnóstica.
Conclusiones: Se requiere un monitoreo de la dinámica de los cuidados de los pacientes sospechosos de COVID-19 con un especial enfoque en el fortalecimiento de la prevención de la transmisión nosocomial y en la comunidad.

Palabras claves: Coronavirus, COVID-19, demora diagnóstica, prevención, transmisión.

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.[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.[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.[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.

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 clinical symptoms and the first medical assistance (patient delay): 7 days.
- Time between first medical assistance and admission to isolation (system delay): 0 days.
- Time between the appearance of symptoms and admission to isolation (total diagnostic delay):

7 days.

- Time between admission and PCR for COVID-19: 5 days

- Time between the performance of the test and the confirmatory result: 2 days.

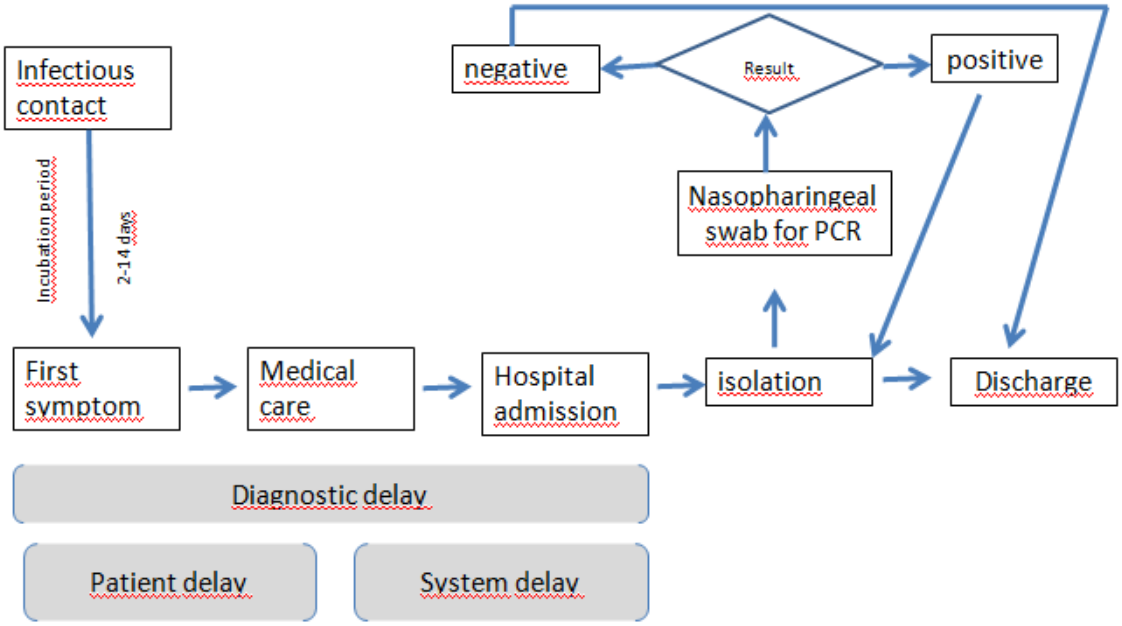

Figure. Chronology of patients suspected with COVID-19

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 arbovirosis, 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.

REREFERENCES

1. Wilder Smith A, Chiew CJ, Lee VJ. Can we contain the COVID-19 outbreak with the same measures as for SARS?. Lancet Infect Dis [Internet]. 2020 May [Cited 21/04/2020]; 20(5): [aprox. 2 p.]. Available from: https://www.ncbi.nlm.nih.gov/pubmed/32145768

2. Hellewell J, Abbott S, Gimma A, Bosse NI, Jarvis CI, Rissell TW, *et al.* Feasibility of controlling COVID-19 outbreaks by isolation of cases and contacts. Lancet

Glob Health. 2020;8(4):e488-e96.
3. Mitchell R, Banks C. Emergency departments and the COVID-19 pandemic: making the most of limited resources. Emerg Med J [Internet]. 2020 Apr [Cited 21/04/2020];37(4):[aprox. 2 p.]. Available from: https://emj.bmj.com/content/emermed/early/2020/04/01/emermed-2020-209660.full.pdf
4. Ministerio de Salud de España. Guía para la utilización de tests rápidos de anticuerpos para COVID-19 [Internet]. España: Ministerio de Salud de España; 2020 [Cited 21/04/2020]. Available from: http://www.mscbs.gob.es/profesionales/saludPublica/ccayes/alertasActual/nCov-hina/documentos/Guia_test_diagnosticos_serologicos_20200407.pdf
5. Cai J, Wang X, Ma A, Wang Q, Han X, Li Y. Factors associated with patient and provider delays for tuberculosis diagnosis and treatment in Asia: a systematic review and meta-analysis. PLoS. 2015;10(3):e0120088.
6. Álvarez Lerma F, Marín Corral J, Vila C, Masclans JR, González de Molina FJ, Martín Loeches I, *et al.* Delay in diagnosis of influenza A (H1N1) pdm09 virus infection in critically ill patients and impact on clinical outcome. Crit Care. 2016;20(1):337.
7. Choi SH, Chung JW, Kim T, Park KH, Lee MS, Kwak YG. Late diagnosis of influenza in adult patients during a seasonal outbreak. Korean J Intern Med. 2018;33(2):391-6.
8. European C enter for Disease Prevention and Control. Infection prevention and control for COVID-19 in healthcare settings – Third update. Stockholm: ECDC; 2020.
9. National Center for Immunization and Respiratory Diseases (NCIRD). Interim Guidelines for Collecting, Handling, and Testing Clinical Specimens from Persons for Coronavirus Disease 2019 (COVID-19) [Internet]. Atlanta: National Center for Immunization and Respiratory Diseases [Cited 21/04/2020]. Available from: http://www.cdc.gov/coronavirus/2019-ncov/lab/guidelines-clinical-specimens.html
10. Joob B, Wiwanitkit V. COVID-19 can present with a rash and be mistaken for dengue. J Am Acad Dermatol. 2020;82(5):e177.
11. Nawas ZY, Tong Y, Kollipara R, Tong Y, Woc Colburn L,Yan AC, *et al.* Emerging infectious diseases with cutaneous manifestations: Viral and bacterial infections. J Am Acad Dermatol. 2016;75(1):1-16.
12. Lorenz C, Azevedo TS, Chiaravalloti-Neto F. COVID-19 and dengue fever: A dangerous combination for the health system in Brazil. Travel Med Infect Dis [Internet]. 2020 [Cited 09/04/2020];32:[aprox. 2 p.]. Available from: http://pubmed.ncbi.nlm.nih.gov/32179124/
13 Saavedra Velasco M, Chiara Chilet C, Pichardo Rodriguez R, Grandez Urbina A, Inga Berrospi F. Coinfección entre dengue y COVID-19: Necesidad de abordaje en zonas endémicas. Rev Fac Cien Med Univ Nac Córdoba. 2020;77(1):52-4.

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