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Clinical Epistemology of Acute Respiratory Infection caused by Covid-19 During the Pandemic

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ABSTRACT

The current health context includes knowledge of acute respiratory diseases motivated by the increase in morbidity, mortality and emerging epidemic activity evidenced in the different epidemiological studies that express the amplification in these conditions. The Covid-19 Pandemic does not escape from the above; therefore, this mini bibliographic review was carried out supported by documentary-bibliographic analysis, with the aim of updating the topic related to clinical epistemology of acute respiratory infection caused by Covid-19 during the Pandemic. For the development of the research, scientific methods of the theoretical level were used, among which the inductive-deductive and synthetic analytical methods stood out; which allowed the exhaustive bibliographic review of 21 articles selected in logical order according to what was established in the inclusion criteria. These investigations were studied and led to the formulation of conclusions that helped in the generation of new knowledge. Finally, it was demonstrated that the clinical epistemology of acute respiratory infection caused by Covid-19 during the Pandemic, demands the scientific-practical systematization of inquiry, argumentation and research in professional medical practice directed by the scientific method of the profession to achieve relevant transformations that lead to quality and excellence of the services provided. It was also established that acute respiratory infections are preventable diseases, that in the context of the Covid-19 pandemic, they made clinical diagnosis more complex; consequently, the timely identification and treatment of comorbidities prevents serious acute respiratory complications and reduces morbidity and mortality caused by Covic-19.

Keywords: The Clinical Epistemology; Acute Respiratory Diseases; Covid-19; Pandemic; Scientific-Practical Systematization; Morbidity and Mortality

Introduction

The variable health situation identified in recent times, classifies emerging and re-emerging diseases as relevant to the epidemiological context; specifically infectious diseases and within these the acute respiratory disease. The current health context includes knowledge of acute respiratory diseases as they experience intense epidemic activity, evidenced in the different epidemiological studies that express the increase in these conditions. The Covid-19 Pandemic does not escape from the above; this disease represented an emerging stage marked by a novel infectious disease, of viral origin, that appeared for the first time at the end of 2019, in China, in the province of Hubei, especially in the city of Wuhan. So the initial epidemiological studies showed that the entity expanded rapidly with very aggressive behavior in

adults between 30 and 79 years old, a global fatality rate of 2.3% was described. [1,2] The authors, Serra Valdés MA and Vélez M, Velásquez Salazar P, Acosta Reyes J, Vera Giraldo CY, Santiago FrancoJ, Jiménez C, argued the aforementioned and contributed to the clinical knowledge and pathogenesis of this disease. Therefore, it is important to note that most of the first cases corresponded to people who worked or frequented a seafood market, which also distributed other types of meat, including wild animals, traditionally consumed by the local population.

In this sense, the first cases presented pneumonia of unknown origin, situation that expanded rapidly throughout the country. [2,3] In consequence, in the face of the health contingency, Chinese scientists identified the causal agent, revealing a new coronavirus, later named SARS-CoV-2, and they named the new disease that the virus caused COVID-19. (Coronavirus 2019). Immediately, in the month of January, the existence of 7,736 cases and 170 deaths were confirmed in China, and 82 cases outside China. However, the variability in the clinical manifestations of the patients and the increase in the number of cases influenced the continuous review of action protocols and the consequent modifications supported by the clinical, epidemiological and therapeutic reports. [3-5] Paules CI, Marston HD, Fauci AS and the authors Wu F, Zhao S, Yu B, Chen YM, Wang W, Song ZG, Hu Y, Tao ZW, Tian JH, Pei YY, Yuan ML, Zhang YL, Dai FH, Liu Y, Wang QM, Zheng JJ, Xu L, Holmes EC, Zhang YZ, described a new coronavirus associated with human respiratory disease and the complications of these patients, signifying the impact of comorbidities on the unfavorable evolution of patients. The high demand for care caused by Covid-19 and the rapid expansion of the virus across different countries generated a rapid response with a focus on active and contextualized surveillance based on biological, socio-cultural and economic epiphenomenal.

The authors of this research argue that the clinical epistemology of acute respiratory diseases during the pandemic implies undertaking transformations in the clinical order, from a practical integrative, methodological and systemic approach; premeditated at competence and performance, pro-scientific-research activity in addition to the holistic perspective to achieve transformations in the medical care dimension leading to the quality of the patient's approach. Despite the clinical manifestations and striking aspects of SARS-CoV-2, together with the knowledge of the pathogenesis, the laboratory diagnosis, preventive and medicinal treatment, in addition to the early identification of complications, led to the scientific review, and to the research related to etiology; initially directed at the common agents of acute respiratory infection, that is why the World Health Organization considered it important to include the agents of avian influenza, severe acute respiratory syndrome and Middle East respiratory syndrome coronavirus, as main agents to be studied, however negative results were obtained and they were discarded as ethological agents, causing the worldwide recruitment of several scientists. [6,7] Therefore, on March 11th, 2020, the World Health Organization declared the occurrence of the COVID-19 pandemic, urging all countries to take measures and join control efforts in what appears to be the largest emergency in the world global public health of modern times [3,8,9].

It is correct to refer that the clinical manifestations and striking aspects of SARS-CoV-2, together with the knowledge of the pathogenesis, the laboratory diagnosis, preventive and medicinal treatment, in addition to the early identification of complications, led to the scientific review, and to the research related to etiology; initially directed at the common agents of acute respiratory infection, that is why the World Health Organization considered it important to include the agents of avian influenza, severe acute respiratory syndrome and Middle East respiratory syndrome, as main agents to be studied, however negative results were obtained and they were discarded as ethological agents, causing the worldwide recruitment of several scientists; These events influenced the World Health Organization to demonstrate and announce that epistemology of medicine is the scientific principles that support clinical and scientific practice, in the construction of medical knowledge [3,9,10] Understanding of acute respiratory diseases allowed the timely diagnosis of the complications of the condition, during the health emergency caused by covid-19. Thus, scientific inquiry and argumentation must prevail at this stage to amplify clinical and paraclinical research with another perspective, and adopt different analysis systems of the disease to comprehensively address Covid-19 as a complex, novel and changing process.

For that reason, this research is necessary to update the accredited knowledge of the clinical epistemology of the acute respiratory infection caused by Covid-19 during the Pandemic and achieves an epistemological approach for professionals from the correct application of the clinical epidemiological method as a scientific procedure and essential support in the complexity of this health context.

Developing

Significance of the Clinical Epistemology of the Acute Respiratory Infection Caused by Covid-19 During the Pandemic

The epistemological systematization of complex diseases represents a challenge in contemporary medical practice and the respiratory infection caused by Covid-19 during the pandemic exemplifies the above. Epistemology of medicine illustrates when the nurses, doctors, clinicians, medical scientists during the period of comprehensive healthcare practice come to a conclusion about how best to treat disease and help patients; following the logical origin of medical knowledge. This knowledge based on the clinical examination of the patient that shows the reality supported by the application of the clinical epidemiological method allows the hypothesis of the clinical diagnosis and by complementary examinations, which strengthens the doctor-patient relationship, develops the principles of medical ethics and leads to the excellent competence and performance of the professional involved. [10] Currently represents the ascendancy in the area of medical knowledge as well as the analysis of medical practice oriented towards understanding of the health-disease pro-

cess; consequently the authors Chen Y, Liu Q and Guo D studied the health emergency caused by the coronavirus, as did Zhou P, Yang XL and collaborators who consider that the epistemology of the pandemic must take into account the complexity of the context, which leads to the application of a series of procedures such as observation, inquiry, construction, validation and evaluation, leading to decision making, professional autonomy and excellence of clinical procedures.

The above allows us to reveal that the COVID-19 pandemic was considered the most serious and deadly emergency situation of these times, demanding more effective strategies, control measures and clinical-epidemiological procedures to prevent rapid epidemic transmission, as well as the severe clinical forms and complications of this disease. The data collected indicated that this infectious disease caused an average mortality of. [5-7] Synthesizing, it was demonstrated that the etiological agent is the severe acute respiratory syndrome virus type-2 (SARS-CoV-2), which causes COVID-19. It is taxonomically located in the Coronaviridae family and represents a new, different viral agent to the SARS agent. It should be noted that the virus is generally transmitted from person to person through small droplets of saliva emitted when talking, sneezing, coughing or breathing. Transmission by aerosols (< 5 μm) is also documented; this spreads mainly when people are in close contact, but can also spread by touching a contaminated surface and then bringing contaminated hands to the face or mucous membranes. [8-10] In contrast, the authors of this research agree that they refer to the fecal excretion of the virus, which suggests the possibility of transmission is usually by the fecal–oral route.

Likewise, transmission of the virus from asymptomatic cases has been reported. Another element is the incubation period considered by the authors to be variable, but generally lasts from 2 to 7 days, although sometimes it can be up to 2 weeks, this suggests an ideal minimum quarantine period of 14 days. At present, mathematical models have been established that assume the beginning of transmission between 1 and 2 days before the onset of symptoms. [11-13] Related to the pathogenesis, it has been observed that SARS-CoV-2 induces the production of acute cardiac damage and heart failure, with an increase in troponin levels associated with greater mortality. It has been reported that approximately between 7 and 10 % of cases progress to severe disease, and the fatality rate can be between 1% and 3%, although it varies depending on the comorbidities in the patients and the geographical location. [14] The authors of this research argue the need to highlight the course of COVID-19; as a very variable aspect that ranges from asymptomatic infection to severe pneumonia treated with assisted ventilation; which frequently translates the fatal evolution of those affected.

Another element of vital interest is that the clinical symptoms of acute respiratory infections do not differ from what is found in patients with Covid -19. Among the common symptoms of this infection, fever and cough are described, present in most patients, but not in all symptomatic cases. Gastrointestinal manifestations are present, as well as general signs and symptoms. Summarizing the symptoms of these patients with COVID-19, it should be revealed that they may present marked lymphopenia, as occurs in other respiratory viruses (Influenza), due to the infection and destruction of T lymphocytes by the virus. It was described that accelerated viral multiplication compromises the integrity of the alveolar-capillary barrier and affects the cells of the pulmonary capillaries, accentuating the inflammatory response with greater attraction and accumulation of neutrophils, monocytes and the exacerbation of capillary endothelitis. [15,16] The authors Bikdeli B, Madhavan M, Jimenez D, Chuich T, Dreyfus I, Driggin E, et al who indicate that SARS-CoV-2 infection facilitates the stimulation of endothelitis in the pulmonary vascular circulation a result of virological replication and causes massive apoptosis of endothelial cells and triggers the loss of the anticoagulant function of the vascular lumen.

When analyzing the complementary tests, the Pan American Health Organization and the WHO describe that a tracheal aspirate is required for the diagnosis of COVID-19, but if it is impossible to perform it, upper respiratory tract samples such as nasopharyngeal aspirate are recommended as a second choice. or the laryngeal and oropharyngeal swab; In addition, complementary humoral and imaging examinations. [3,9,16, 17] The advance of the pandemic led to improved diagnosis and decreased morbidity and mortality. Complementary cutting-edge technology was added that supported the diagnosis, such as computed axial tomography of the chest, in which pulmonary infiltrates were evident in ground glass. [18] The authors of the research suggest that it is important to represent the most common complications of COVID-19; these include pneumonia, present in virtually all severe cases, acute respiratory distress syndrome (ARDS), myocarditis, acute kidney injury, and bacterial superinfections, frequently in the form of septic shock; Coagulation disorders and multiple organ involvement occur frequently [19,20] Other authors like Bhimraj A, Morgan R, Hirsch A, Lavergne V, Baden L, Chi-Chung V, et al considered the multisystem, emergent and dynamic progression of the disease in addition to the high number of deaths, influencing the World Health Organization to declare the current coronavirus epidemic as a health emergency situation.

The epidemiological, clinical, and laboratory limitations, even in therapeutics, determined the planning of strategic actions such as professional training on the disease, the design of protocols, models, algorithms, and other methodological instruments supported by the best available evidence, certainly at a global level. Three large waves of COVID-19 were recorded. In the first wave, caused by the original variant of SARS-CoV-2, health measures were implemented that managed to delay the circulation of the virus, but it was not enough to provide an adequate health response. It should be noted that at that stage, no vaccines or effective treatments had been developed to reduce viral transmission. Similarly, the scarce presentation of clinical evidence obtained from randomized controlled trials, systematic re-

views and meta-analyses, as well as evidence summaries and guidelines clinical practice; showed that the COVID-19 disease generated a situation of rapid evolution, with limited evidence, and recommendations based on case reports, observational studies and retrospective analyses. [20,21] Finally, the authors of this research agree with the reviewed research that recognized the integration of the diagnosis of COVID-19 with the epidemiological and clinical support, corroborated by laboratory, microbiological and radiographic findings despite the fact that the infection can be asymptomatic, and manifest a wide variety of symptoms.

Conclusion

It was demonstrated that the clinical diagnosis of Covid-19 became more complex during the pandemic, which reveals the importance of the clinical epistemology of acute respiratory infection caused by Covid-19 during the Pandemic as it constitutes a challenge for contemporary medicine; Therefore, scientific-practical systematization based on inquiry, argumentation and research directed by the scientific method of the profession is necessary to achieve relevant transformations and excellence in the services provided.

Conflicts of Interest

The authors declare no conflicts of interest.

Authors Contribution

- Ph.D. Josefa Bell Castillo: Conception of the idea and preparation of the article. Data collection as well as analysis and interpretation. Contribution with the design, Search and review of bibliography; review and approval of the final version of the manuscript.
- Dr. Adis Nuria Nuñez Bicet: Contribution with the design, Search and review of bibliography.
- Dr. Maria de Jesus George Bell: Contribution with the design, Search and review of bibliography.
- Ph.D. Wilberto George Carrión: Contribution with the analysis and interpretation of the data. Participation in the revision of the manuscript.
- Dr. Victor Samuel Ramirez Barayobre: Contribution with the analysis and interpretation of the data; earch and review of bibliography. Participation in the revision of the manuscript.

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