Archives of Razi Institute, Vol. 77, No. 1 (2022) 111-115

DOI: 10.22092/ARI.2021.356550.1869

Original Article

Epidemiological and Clinical Comparative Study for COVID-19 Patients in Babylon Province, Iraq

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Received 17 October 2021; Accepted 10 November 2021
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Abstract

A respiratory illness outbreak caused by the severe acute respiratory syndrome coronavirus (SARS-CoV-2) began in China and spread to other nations. Typically, the real-time reverse transcriptase polymerase chain reaction of nasopharyngeal swabs has been utilized to confirm the clinical diagnosis. However, it is uncertain if the virus is found in specimens from other places, and therefore, possibly transmitted in methods other than respiratory droplets. Patients with coronavirus disease 2019 (COVID-19) were identified based on symptoms, and SARS-CoV-2 detection confirmed the diagnosis. Pharyngeal swabs were obtained from August to September 2020. Individuals with obtained samples based on clinical indications from hospitals in Marjan City and a public health laboratory in Babylon Province, Iraq, were included in this retrospective study. The findings of the clinical symptoms and their intensity were provided in the chart, which revealed that all indications were equal in both male and female patients, with no obvious differences, especially given that all patients' ages ranged from 30 to 70 years. High temperature, sore throat, and shortness of breath were shown to be the most common symptoms, in comparison to other symptoms in the chart.

Keywords: Clinical signs, COVID-19, Epidemiology, Pneumonia

1. Introduction

An atypical pneumonia cluster has been identified in Wuhan city, China, on 31 December 2019 (1). The new coronavirus (2, 3), a serious acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was subsequently identified as the etiologic agent (4, 5). In extreme cases, it can lead to acute respiratory distress, called the coronavirus disease 2019 (COVID-19) (6). The simple SARS-CoV-2 replication number was calculated at 2.2. Since then, the number of human-to-human transmissions in and outside China has impacted 87,137 cases with effect from 1 March 2020 in 59 countries across the world (7-9). The confinement of SARS-CoV-2 depends on successful prophylaxis or stopping the spread by rapidly identifying and distinguishing all affected persons in the absence of a vaccine. Symptomatic connections should be removed early, while near connections with cases that may be infection incubators should be tracked and quarantined (10-12). There is a need for a wide variety of clinical symptoms, clinical guidelines, and biomarkers that can better identify patients that are more likely to progress through serious illness. While reported studies to date have established pre-existing chronic non-communicable diseases as a risk factor for clinical decline, the experience thus far in Singapore is that patients without severe comorbid nesses may still develop serious illnesses (7, 13-15). In a case-control cluster of 100 COVID-19 and 400 controls, we carried out a risk factor study to estimate the possibility of

milder cases of COVID-19 to classify the epidemiological and clinical risk factors relevant to COVID-19 and test the precision of risk-scoring systems based on readily available clinical knowledge. The first case in Iraq was reported in March and the number of cases was mixed with those who arrived from other countries; moreover, the majority of instances progressively increased and extended to all the provinces. In Babylon, Iraq, especially the number of cases, was regulated; however, now it seems that the number of cases at Babylon was quite high. The current study aimed to evaluate clinical trials with disease intensity and epidemiology. Although medical symptoms and findings in seriously ill patients with SARS-CoV-2 infection are limited, they are of vital significance for the reduction of mortality. This research studied critically ill patients with reported SARS-CoV-2 pneumonia admitted to Merjan Hospital, a 20-bed hospital in Babylon, Iraq. The historical SARS-CoV-2-associated morbidity and mortality results from this analysis would be of great importance for the early detection of persons at risk of becoming seriously ill and more likely to benefit from intensive care.

2. Materials and Methods

2.1. Design of the Study

This retrospective case-control research was conducted in the General Health Laboratory, Babylon, and Merjan Hospital. It was performed in the sense of the organizational assessment of the pandemic. This research observed the Clear analysis of a multivariable estimation method for patient diagnosis and treatment or diagnostic information dissemination. The study was carried out on patients presenting at Merjan Hospital and the samples were examined for SARS-CoV-2 from 1/8/2020 to 3/9/2020. Patients were either self-diverted from primary care providers or reported at-risk patients by nationwide touch tracing activities. Cases were identified as individuals with a positive SARS-CoV-2 reverse transcription polymerase chain reaction (RT-PCR) result.

Swabs were collected from 20 patients in viral transport media and directed to the General Health Lab for examination. Afterward, 200 µl of samples were added to an automated DNA extraction kit, loaded in the bars, and placed in the Smarter apparatus for RNA extraction for 38 min.

2.2. RNA Extraction and Reverse Transcription

A nucleic acid purification package based on the magnetic bead process was used for the extraction of RNA from nasopharyngeal swabs as directed by the manufacturer (Cat No. DA0630, DAAN Gene, China). Promega (fluorometer, ng/ul) was employed to define the purity and quantity of the viral RNA. The next RT-PCR began using 2 µl of the total RNA, a random hexamer of 100 pmol, at a final reaction volume of 20 µl. Thermocycling was performed on Bio-Rad Three Thermal Cycler (Biorun). The initial state was changed at 15°C for 10 min, complementary DNA synthesis began at 32°C for 20 min, and heat inactivation was set at 95°C for 5 min.

3. Results

The results of the clinical symptoms and their severity are presented in figure 1, showing that all signs were equal in both male and female patients and no discernible differences were evident, especially given that the age range of all patients varied from 30 to 70 years. In comparison to other symptoms in the chart, the most prevalent signs were found to be high fever, sore throat, and shortness of breath. Severity was recorded as low for the score range of 1-30 and high for the score range of 40-100. The Y-axis demonstrates severity and the X-axis shows the age and gender of the patients in this study.

Figure 2 shows the RT-PCR results for the collected samples, revealing that positive results vary depending on the curve, with each curve indicating the gene that confirmed the infection with the COVID-19. Figure 2A represents the fluorescein amidites that are used to make fluorescein-labeled oligonucleotide probes or PCR primers for complementary nucleic acid detection. As molecular beacons, oligonucleotides containing

fluorescein on one end and a quencher on the other can be used, which is unique to the virus. Figures 2B and D depict the envelope gene and coronavirus nucleic acid, respectively. The curve increasing from the 10 cycle suggests a recent infection with such a high virus percent concentration.

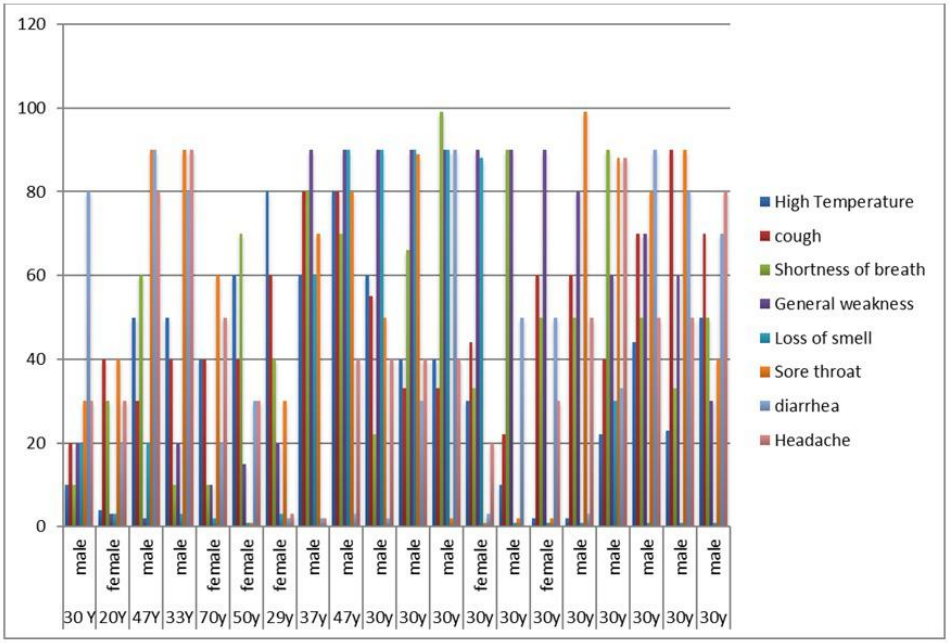

Figure 1. Severity of clinical symptoms

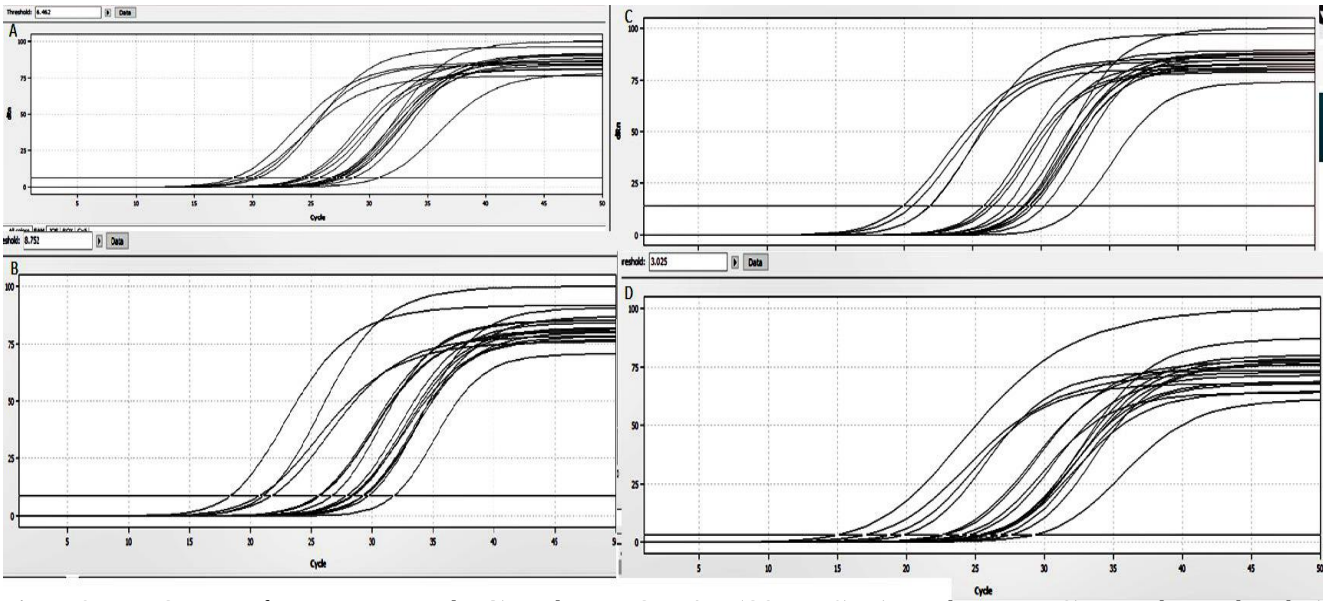

Figure 2. RT-PCR curve for a positive sample; **A)** Real-time PCR FAM (COVID19), **B)** Envelope gene, **C)** Internal control, and **D)** PCR for the nucleic acid gene

4. Discussion

The present study was determined to be significant based on the patients' signs and symptoms in this study; therefore, the usual signs among the patient were fever and difficult breathing, as shown in Figure 1. General indicators have been found to be quite strained since certain patients have moderate to severe symptoms that can be attributed to a reduced intake of the cluster of differentiation 4 (CD4)+T lymphocytes in asymptomatic infections, implying that immune system dysfunction is milder in asymptomatic infections than in symptomatic infections (16-19).

Although patients may have been asymptomatic and experienced less damage to themselves, they may have been unaware of their illness, and therefore, not isolated or sought treatment. They may also have been missed by healthcare professionals, and consequently, unknowingly spread the virus to others. Patients with asymptomatic SARS-CoV-2 infection have a shorter duration of viral release from nasopharyngeal swabs and a decreased chance of recurring positive nasopharyngeal SARS-CoV-2 test results, which can be the result of the guide for developing prevention and management methods for patients who are asymptomatic (16, 20, 21).

Another observation was that the real-time curve was clearly marked by the severity of the viral infection, as seen in Figure 2 of some case startups of the 10-cycle and moderate symptom patients of the 30-cycle, which might confirm genetic variation in the strain of the virus that induced infection or immunity to the virus. Finally, the present was nearly equivalent between men and women; therefore, there was no need for attention; in this regard, the study focused on the differences in signs and similarities between serious and mild patients.

The clinical features of patients with asymptomatic vs. symptomatic coronavirus disease 2020 in Babylon were investigated in this case study. The clinical characteristics and RT-PCR results were the subjects of current research. In this analysis, remark, as seen in figure 1 of certain 10-cycle startups and 30-cycle patients with a mild symptom, was obviously the seriousness of the viral infection, which could support the genetic diversity in the virus strain that generated infection or immunity. The study focused on differences in signs and similarities between serious and moderate patients. Although the results of this research found that asymptomatic patients might have suffered from less damage on their own.

Authors' Contribution

Study concept and design: N. R. A.
Acquisition of data: Z. A. A.
Analysis and interpretation of data: N. R. A.
Drafting of the manuscript: N. R. A.
Critical revision of the manuscript for important intellectual content: N. R. A.
Statistical analysis: H. A. A.
Administrative, technical, and material support: Z. A. A.

Ethics

All the procedures were approved by the ethics committee of the Babylon University, Babylon, Iraq under the project number 9-7541547.

Conflict of Interest

The authors declare that they have no conflict of interest.

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