

Corona In Trauma: Should Asymptomatic Patients Be Treated Based On Chest X-Ray Findings?

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ABSTRACT

Introduction:

Regarding the high prevalence of asymptomatic infections, recognition of patients infected with Coronavirus Disease 2019 (COVID-19) has turned into a challenging issue. Therefore, this study aimed to evaluate the prognosis of asymptomatic patients with abnormal CXR indicative of COVID-19 for two weeks.

Materials and Methods:

This cross-sectional study included 40 patients who were referred to shahid hashemi nezhad hospital with trauma and underwent CXR. The patients were selected based on the purposive sampling method. The inclusion criteria were asymptomatic patients with trauma who were referred to our hospital and underwent chest CXR indicative of COVID-19. Demographic characteristics of the patients were recorded in a checklist. The real-time reverse transcription-polymerase chain reaction assay was carried out to diagnose the novel COVID-19. Out of 40 patients, 23 cases had positive test results; however, the others did not perform the test. The patients were followed up for 30 days in terms of the progress of their respiratory disease. Furthermore, those in the hospital were controlled daily, and the discharged cases were followed up via telephone.

Results:

This study included 40 traumatic patients, and the majority of cases (n=29,72.5%) were male. Upon admission, 37 (92.5%) cases had no signs of common cold, such as cough and fever. However, three (7.5%) patients had an occasional cough, and 10 (25%) cases remembered to have flu-like symptoms in the past two weeks. The mean hospital stay of the patients was estimated at 3.2±1.4 days. It should be noted that no death and respiratory distress syndromes occurred during the follow-up period.

Conclusion:

A favorable prognosis of asymptomatic patients with CXR indicative of COVID-19 was obtained in this study, and none of the cases developed critical forms of the disease.

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Introduction

Common cold is regarded as a generally self-recovering disease caused by Coronaviruses. During the past years, coronaviruses have been highlighted due to their widespread outbreaks throughout the Eastern countries (1). Recently, a novel primary atypical coronavirus-infected pneumonia has been broken out in China and began to spread worldwide without knowledge on its transmission mechanism and potential treatment strategies.

Furthermore, there have been no gastrointestinal or respiratory complaints in some cases (2). Therefore, considering the high prevalence of asymptomatic infected cases, the recognition of patients infected with coronavirus disease 2019 (COVID-19) has turned into a challenge.

Although COVID-19 is a virus that originated in animals, it has become widespread through human-to-human transmission; however, there has been no report of direct zoonosis so far. Individuals might be infected by contact with the droplets of the upper respiratory tract from coughing or sneezing (3).

High resolution computed tomography (CT) was the first method for the investigation of patients with COVID-19 in China; moreover, it was considered more sensitive, compared to plain radiography (4). Since the disinfection of the CT scanner is time-consuming, difficult, and damaging, the American College of Radiology has advised performing chest X-rays (CXR) as the first-line test to reduce the cross-infection risk (5). Nowadays, the presence of patients with COVID-19 imposes pressure on emergency departments, and academic trauma centers have to deal with so many cases with other complaints that have a CXR indicative of COVID-19. In addition, there is not enough evidence regarding the standard treatment, quarantine method, and follow up. This study aimed to evaluate the prognosis of asymptomatic patients with abnormal CXR indicative of COVID-19 for two weeks.

Materials and Methods

This cross-sectional study evaluated 40 patients with trauma who were referred to an academic trauma center and underwent

chest CXR. To the best of our knowledge, no previous study has been conducted on this issue so far. It should be noted that the trauma cases selected during one month had no respiratory symptoms.

The hospital in which the study was conducted was a level 2 trauma center in an urban area with about 180 trauma cases monthly; however, due to quarantine and travel restrictions, this number reduced significantly.

Patient selection

This study included 40 traumatic patients who were selected via the purposive sampling method. The inclusion criteria were asymptomatic patients with trauma referred to the hospital and underwent CXR indicative of COVID-19. On the other hand, the patients with abnormal laboratory test results (creatinine, lactate dehydrogenase, arterial blood gases) and those with tachypnea or abnormal pulse oximetry were excluded from the study.

Positive radiologic findings included bilateral, peripheral, and parenchymal abnormalities, particularly in the lower zone. It is worth mentioning that an experienced radiologist reviewed all the cases.

Demographic characteristics of the patients were recorded in a checklist, and they then underwent real-time reverse transcription-polymerase chain reaction (RT-PCR) assay for novel COVID-19. According to the assay results, 23 patients were found to be positive; however, others did not return for the test. Following that, the patients were followed up for 30 days regarding the progress of the respiratory disease. Furthermore, the patients admitted to the hospital were controlled daily, and the discharged ones were followed up via telephone. Before discharge, a nurse informed patients about the common symptoms and red flags of COVID-19, such as fever, cough, fatigue, and shortness of breath. The patients were also educated about quarantine and hand hygiene both verbally and through a written patient education form. Moreover, they were asked to call the nurse or come to the hospital as soon as possible if they experienced any changes in their general health condition.

Results

This study included 40 traumatic patients, and the majority of them (n=29, 72.5%) were male. Upon admission, 37 (92.5%) cases had no signs of common cold, such as cough and fever. However, three (7.5%) patients had an occasional cough, and 10 (25%) cases remembered to have flu-like symptoms during the past two weeks.

Due to the severity of the trauma, seven (17.5%) patients were admitted to the hospital units, and 33 (82.5%) cases were discharged from the emergency department. In addition, two admitted patients underwent surgery. The mean hospital stay was obtained at 3.2 ± 1.4 days. It is worth mentioning that no death and respiratory distress syndrome occurred during the follow-up period; additionally, no new cases of COVID-19 were reported in patients' families within one month. Table 1 tabulates the patients' medical history.

Table 1: Patients' medical history

Medical history		
	Yes	No
Smoking (N %)	10(25)	30(75)
Opium addiction (N %)	34(85)	6(15)
Ischemic heart disease (N %)	5(12.5)	35 (87.5)
Diabetes (N %)	2(5)	38(95)
Chronic obstructive pulmonary disease (N %)	17(42.5)	23 (57.5)

Discussion

This study aimed to reveal the need for the treatment of asymptomatic patients who were suspicious of COVID-19 that was discovered accidentally. Asymptomatic patients were enrolled in this evaluation and followed up for four weeks. New cases of the disease were not reported in the patients' families.

In this study, 25% of patients were smokers; however, none of these cases develop COVID-19. Therefore, it was impossible to evaluate the impact of smoking on the disease. Recently conducted studies mentioned the negative role of smoking in the progression of the disease. In addition, the infected cases -if there were any- were at higher risk of developing severe diseases, as well as a higher need for

intensive unit care and mechanical ventilation. The mortality rate was also higher in smokers with severe diseases (6). In addition, 85% of cases had a history of addiction or opium usage; however, similar to the smoking cases, its negative or positive effects on COVID-19 were not investigated in this study. Regarding the higher prevalence of chronic obstructive pulmonary disease among substance abusers, the prognosis of COVID-19 might be worse in addicts (7).

The patients were followed up for 30 days since previous studies reported the incubation period of five days for COVID-19 that can be extended to 14 days in some cases after exposure (8). None of the patients reported COVID-19 related symptoms at the beginning of the study. Furthermore, a study conducted by Zhiliang suggested that a large number of COVID-19 carriers were asymptomatic (9).

Similar to most viruses, COVID-19 infects lung alveolar epithelial cells. The first symptoms of the disease are related to the upper respiratory tract, such as nasal congestion, fever, and cough, which appear in less than a week after infection (10).

The patients were also asked to present the most common symptoms of COVID-19 observed in themselves and their families. They were also required to report any unusual changes in their health, such as abdominal pain, changes in bowel habits, nausea, and headache.

The proposed tests for COVID-19 involve some limitations that are accompanied by a low rate of sensitivity and specificity. According to one study, the sensitivity of the RT-PCR test varied from 60% to 97% (11). Although plain radiography was utilized as a screening test, based on the evidence, there were abnormal findings (80%) in CXR of hospitalized patients infected with COVID-19 (12). Bilateral, peripheral, and parenchymal abnormalities, such as airspace opacities, particularly in the lower zone, were the main frequent findings in patients with COVID-19 (13).

Regarding the limitations of this study, one can name the utilization of CXR as a standard test for the inclusion criteria. The CXR is neither sensitive nor specific for the diagnosis of COVID-19; therefore, patients

other than those infected by coronavirus might have been enrolled in the study. Additionally, patients were followed up by telephone, and their responses were relied upon regarding the progress of the disease and involvement of the family. On the other hand, the condition of quarantine was unknown at the patient's home; therefore, there was no control over the risk of contact with COVID-19 or the possibility of reinfections.

Conclusion

A favorable prognosis of asymptomatic patients with CXR indicative of COVID-19 was obtained in this study, and none of the cases developed critical forms of the disease.

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