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Scoring System for the Diagnosis of COVID-19

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Abstract: Due to the international spread of COVID-19, the difficulty of collecting nasopharyngeal swab specimen from all suspected patients, the costs of RT-PCR and CT, and the false negative results of RT-PCR assay in 41% of COVID-19 patients, a scoring system is needed to classify the suspected patients in order to determine the need for follow-up, home isolation, quarantine or the conduction of further investigations. A scoring system is proposed as a diagnostic tool for suspected patients. It includes Epidemiological Evidence of Exposure, Clinical Symptoms and Signs, and Investigations (if available). This scoring system is simple, could be calculated in a few minutes, and incorporates the main possible data/findings of any patient.

Keywords: Nasopharyngeal swab, COVID-19, diagnosis, RT-PCR, CT, Score system.

Article History

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To the Editor:

On the 11th of March 2020, The World Health organization (WHO) declared novel coronavirus (COVID-19) as a pandemic in response to the outbreak in more than 110 countries [1].

The common symptoms and signs of COVID-19 infection include fever, dry cough, shortness of breath, and breathing difficulties. Other less common symptoms include anosmia, sore throat, and runny nose [2, 3].

The Centers for Disease Control and Prevention (CDC) recommended the collection of a nasopharyngeal swab specimen to test for COVID-19. Reverse-transcription polymerase chain reaction (RT-PCR) testing is used for detecting COVID-19 RNA [4]. A positive RT-PCR test confirms the diagnosis of COVID-19. If initial testing is negative, but the clinical suspicion remains, the WHO recommends re-sampling and testing from multiple respiratory tract sites [2]. A recent study reported that some patients with positive chest CT findings might present with negative results of RT-PCR for COVID-19 [5].

Due to the international spread of the disease, the difficulty of collecting nasopharyngeal swab specimen from all suspected patients, the costs of RT-PCR and CT, and the false negative results of RT-PCR assay in 41% of COVID-19 patients [4, 5], a scoring system is needed to classify the suspected patients in order to determine the need for follow up, home isolation, quarantine or carrying out further investigations.

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Table 1. Scoring system for diagnosis of COVID-19.

Epidemiological Evidence of Exposure	Yes	No
Travel to a Country or an Area with Confirmed Cases of COVID-19 in the last 14 Days. e.g. USA, UK, China, Italy, South Korea, Iran, Spain.	3	0
OR		
Travel or Living in an Area or a District with Confirmed Cases of COVID-19 in the last 14 Days. e.g. Tourist Resorts in Hurghada or Luxor (Egypt).	3	0
OR		
Contact with a Case of COVID-19, either isolated (quarantine or home) or admitted at a Hospital.	3	0
Clinical Symptoms and Signs	Yes	No
Fever more than 37.4°C	1	0
Sore Throat AND/OR Runny Nose	1	0
New Dry Cough or Old Dry Cough worsened over the last 3 Days.	1	0
Shortness of Breath or Dyspnea	2	0

If Available:

Investigations	Yes	No
CBC with Leucopenia (with or without lymphopenia)	2	0
Chest X Ray: Ground Glass Pattern AND/OR Peripheral Patches AND/OR Pleural Effusion	2	0
Oxygen Tension less than 95% (ABG) or Oxygen Saturation less than 92% (Pulse Oximeter)	2	0

Probable Case: Score 6 or More.

Possible Case: Score 4 or More.

Provisionally Excluded Case: Score 3 or Less.

The following scoring system is proposed as a diagnostic tool for suspected patients. It includes Epidemiological Evidence of Exposure, Clinical Symptoms and Signs, and Investigations (if available) (Table 1). This scoring system is simple, could be calculated in a few minutes, and incorporates the main possible data/findings of any patient. The scoring system was based on the original scoring system developed by the Saudi Center for Disease Prevention and Control as a byproduct of Saudi Arabia's long-experience in the management of another coronavirus, Middle East Respiratory Syndrome Coronavirus (MERS-CoV), which presented in the year 2012.

In this novel scoring system, shortness of breath/dyspnea was given 2 points because it is the main characteristic of the severe form of COVID-19 [3].

Moreover, cost-effective and accessible investigations such as complete blood picture (CBC) with leucopenia (with or without lymphopenia), ground glass appearance in chest x-ray, and low oxygen saturation below 92% using pulse oximeter were added to the scoring system [2, 3]. The main advantage of these tests (CBC, chest x-ray, and pulse oximeter) is that they are readily available in most primary healthcare/family medicine centers. The new scoring system was used to detect 24 probable cases, of which 17 were confirmed to have COVID-19 (positive PCR and/or characteristic CT chest), with a sensitivity of 70.8% (data not published).

In light of the current COVID-19 pandemic, this score can be adapted and modified as a simple diagnostic system that can

be applied both locally or in the WHO region or even globally.

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CONFLICT OF INTEREST

The author declares no conflicts of interest, financial or otherwise.

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