The Open Biotechnology Journal

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LETTER TO THE EDITOR

COVID-19 Pandemic: The Role of Imaging Technology

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Dear Editor,

The novel Coronavirus Disease 2019 (COVID-19) continues to spread across the globe and healthcare professionals are working interminably to treat the patients. The radiologists have already been contributory in the diagnoses of COVID-19. Radiologists are currently conducting their work from home using teleradiology due to COVID-19 pandemic [1, 2]. The fight against COVID-19 pandemic continues and there is a need of making teleradiology more common. Radiologists can work at home using teleradiology and communicate with the physicians electronically (Telehealth). This means could serve as an excellent way to reduce the risk of spreading or contracting the novel COVID-19. The first lab-confirmed case of COVID-19 in U.S. was diagnosed with the help of chest radiography [1]. The COVID-19 case images can be analyzed using teleradiology; however, other radiological services will be needed in detecting and treating COVID-19 cases. Teleradiology is expected to be part of the solution to the COVID-19 pandemic [1].

Currently, the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) can be diagnosed by virus isolation or detection of viral nucleic acid; however, the clinical challenge is the false negatives associated with the nucleic acid detection; this reason makes the imaging examination more influential. In China, the imaging examination has been the key for clinical diagnostic criteria for COVID-19 cases [3 - 5]. Presently, the diagnosis of COVID-19 is fundamentally based on numerous variables (such as the epidemiological history of the patient, etiological evidence, clinical symptoms, and chest imaging findings). With reference to current diagnostic criteria, the identification of COVID-19

pathogen *via* nucleic acid detection is considered as a gold standard. However, due to various problems of virus detection in the clinical setting (such as shortage of supply test kits, irregular sampling of samples, laboratory error, improper extraction of nucleic acid, *etc.*), there have been false negatives. Healthcare personnel have realized the value of imaging diagnostic in clinical diagnosis of COVID-19 patients. The radiologists can play a vital role in the early identification and diagnosis of suspected patients; this can be of great benefit to the healthcare system. Currently, the chest radiograph is not routinely recommended in clinical practice due to its insensitivity in the detection of COVID-19 at early stage. However; it could serve as a screening tool in medical settings with limited resources. The imaging technology that is very sensitive and can detect the disease at an early stage is Computed Tomography (CT) and is strongly recommended because it can discover subtle changes that are not visible on chest radiography [3]. Many researches reveal that chest CT can detect COVID-19 characteristics manifestations in the lungs. In case of patients with high clinical suspicion of COVID-19 but tested negative on RT-PCR screening, the CT scanning in combination with repeated swab tests may be helpful. The evaluation of the severity of disease can be done using chest CT due to its high sensitivity in novel COVID-19 diagnosis [3].

In the UK any patient suspected with COVID-19 infection will receive a chest X-ray in addition to other identification methods [6]. Currently, most of the literature has focused on chest CT manifestations of COVID-19. Nevertheless, due to CT unavailability in some part of the world and infection control issues related to patient transport to CT suites, the portable Chest Radiography (CXR) is recommended. In some areas around the world with limited access to RT-PCR COVID testing; then the CXR may play a vital role in the early detection of the disease [7]. The Centre for Disease Control and Prevention (CDC) and American College of Radiology give the guidance and suggestion against using any chest

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imaging for COVID-19 detection [8]. The Artificial Intelligence (AI) tools touted to help radiologists detect COVID-19 on imaging scans are popping up in the market almost as quickly as the virus continues to spread. The COVID-19 crisis is expected to have a profound impact on radiology practices, not only during the crisis even after. This pandemic is also expected to stress radiology practices all over the world to an extent not previously experienced. As a result of social distancing measures, teleradiology has also found an added dimension, particularly in terms of practicality, success, as well as its effectiveness.

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