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Peer Review Report for "Radiologic Management of COVID-19: Preliminary Experience of the Iranian Society of Radiology COVID-19 Consultant Group (ISRCC)"

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Revision (0)

Here, you can see the **Reviewers**, **Associate Editors** and **EICs'** comments from the beginning to the end of the revision process.

Faeze Salahshour: Reviewer | **Revision** (0) — 2 Mar 2020

Dear AE,
Thanks to the authors for submitting this valuable manuscript in our journal. The manuscript could be accepted for publication in our journal.
Thanks.

Leila Aghaghazvini: Reviewer | **Revision** (0) — 3 Mar 2020

Dear AE,
The article is interesting and could be accepted.
It needs a writing edition. I prefer if possible attach a highly suspicious figure too.
with best regards

Madjid Shakiba: Reviewer | **Revision** (0) — 3 Mar 2020

Dear AE,

The patients with corona virus infection present in a spectrum from outpatient cases presenting with a mild viral infection and the patients with more severe presentations such as dyspnea and pneumonia [that could be severe and devastating]. In all of these corona clinical forms, diagnosis could be a challenge; especially in outpatient cases, the diagnosis could be important regarding the epidemiologic considerations. When we want to introduce a method as diagnostic, it is better to mention in which patients this method could be diagnostic. Specifically, in case of corona, it is better the authors mention in which group of patients, HRCT could be useful for diagnosis. Is it possible to use the method in outpatient mild cases suspicious for corona? In this regard, it is important the authors mention which patients have undergone HRCT for this report? So, I recommend the authors mention their impression for using HRCT regarding the clinical spectrum of the disease. They could mention their recommendations for future research studies in this field to precisely understand in which patients suspicious to Corona infection, HRCT could be useful and diagnostic for Corona infection. For example, if the authors mention their impression that HRCT could be reserved for inpatient patients or for patients with dyspnea, it would be useful. [or even, they might mention in all patients HRCT is useful].

Thanks.

Amir Jalali: Associate Editor | **Revision (0)** 3 Mar 2020

Dear EIC

According to the reviewers the article needs Minor Revision.

Regards

Kavous Firouznia: EIC | **Revision (0)** 3 Mar 2020

Dear authors,

Your article needs Minor Revision.

Regards

OPEN PEER REVIEW

Revision (1)

Reply to Reviewers

Ideally, the reviewing process can significantly improve the submitted manuscripts by allowing the authors to take into account the advice of reviewers. Author(s) must reply to all reviewers' comments in a separate Word file, point by point. A "**Reply to Reviewers**" document is submitted along with revised manuscript during submission of revised files, summarizing the changes that the authors made in response to the reviewers' comments. The responses to reviewers' comments specifies how the authors addressed each comment the reviewers made.

You can read the authors' responses to the reviewers' comments in the next page.

Radiologic Management of COVID-19: Preliminary Experience of the Iranian Society of Radiology COVID-19 Consultant Group (ISRCC)

Dear Editor,

In December 2019, a novel coronavirus, now commonly known as the COVID-19, emerged in Wuhan, China, causing pneumonia and acute respiratory failure. This highly contagious virus has been spreading rapidly worldwide, with more than 50 countries being currently affected. As of February 25th, more than 2,600 cases of COVID-19 have been reported outside of China. In Iran, the number of COVID-19 positive cases raised to 245 in just a week from when the first case was initially reported. To this date, Iran has experienced the highest number of COVID-19-related deaths after China (1). Elimination of COVID-19 is a global health priority because as long as the virus continues to circulate in any region of the world, increase in infection and mortality rate is inevitable.

Coronaviruses are nonsegmented, enveloped, positive-sense, single-strand ribonucleic acid viruses, belonging to the Coronaviridae family. So far, six types of coronaviruses had been identified of which only two had caused epidemics with high mortality rates; the Middle East respiratory syndrome (MERS – CoV) and the severe acute respiratory syndrome (SARS - CoV) (2). However, seven years after the MERS epidemic, the new COVID-19 virus was introduced in 2019, quickly causing a global outbreak (3). Patients infected with this novel COVID-19 virus manifested with symptoms of severe pneumonia, including fever, fatigue, dry cough, and acute respiratory distress (4). Primary investigations revealed a mean incubation period of 5.2 days for the novel COVID-19–infected pneumonia (NCIP), allowing for the rapid global spread of the disease through air travelers (5). Current evidence suggests that asymptomatic patients have the ability to transmit the virus and contaminate others during their incubation period. Moreover, high sputum viral loads still exist during patient’s recovery period (6). Due to these reasons, the possibility of a pandemic is not far from mind.

According to available guidelines, the diagnosis of COVID-19 should be confirmed by reverse-transcription polymerase chain reaction (RT-PCR) or gene sequencing of respiratory or blood specimens. However, the RT-PCR has a detection rate as low as 30% to 60% at initial presentation as well as being associated with several limitations (7). This delay in diagnosis and treatment subsequently results in a higher risk of infecting a larger population. Thus, finding a strategy for the early diagnosis of COVID-19 is of outmost importance.

Imaging is a critical tool in diagnosing patients suspicious for COVID-19 infection, as well as in evaluating severity and disease progression in COVID-19 infection. In comparison to RT-PCR, chest CT imaging is a more reliable, feasible and rapid method to diagnose and assess COVID-19, especially in epidemic regions. In a recent report from China, chest CT-scan had a sensitivity of 97% for diagnosing COVID-19, superior to RT-PCR (8). Therefore, in addition to being aware of the imaging manifestations of the novel COVID-19 infection, it is essential for radiologists and radiologic departments from across the world to implement strategies for the optimal management of this situation.

Here we summarize the current strategy of the Iranian Radiologic Consultant Group in terms of diagnosis and management of cases suspicious of COVID-19.

In February 2019, with the increasing cases of the novel COVID-19 in Iran and the fear of turning into a serious outbreak, a central committee was established on behalf of the Iranian radiology society in order to provide consultations for physicians dealing with known or suspected cases of NCIP. To reach this goal, the radiologic imaging (including both chest x-ray and chest CT scan) of all patients presenting with symptoms characteristic of NCIP are gathered from across the country and sent to this group via social media or PACS. After interpretation of the imaging features by a group of experienced radiologist from Iran, USA and Canada (ISRCC group), reports are integrated to reach a final conclusion.

To date, the Iranian Society of Radiology COVID-19 Consultants Group (ISRCC) has taken the following steps:

- Created educational videos regarding the radiologic features of NCIP based on current articles and proved cases in Iran (suppl. 1).
  These videos have been widely distributed in social media and medical-related websites, providing easy and fast access for all physicians, particularly radiologists, and have received more than 100,000 views on social networks so far. It is of note that, in order to maintain patients' privacy, their identity was removed from all X-rays and CT slides.
- Implemented a low-dose thoracic CT scan protocol for screening and/or diagnosis of patients suspected of 19-COVID based on a modified version of the existing lung cancer

screening CT protocol, version 5.1, originally provided by American Association of Physicists in Medicine (AAPM) (9).
This protocol was presented to radiology centers and hospitals throughout the country in order to allow for the national harmonization of imaging methods applied.

- Designed a diagnostic protocol for immediate action in case of lack of access to the COVID-19 RT-PCR diagnostic kit.
- Established a consultation response team consisting of national and international radiologists specializing in thoracic imaging.

  An easily accessible social network platform was used to provide direct consultations to physicians from different medical fields. In addition, the presence of international radiologists from North America allowed for 24-hour coverage of consultation.

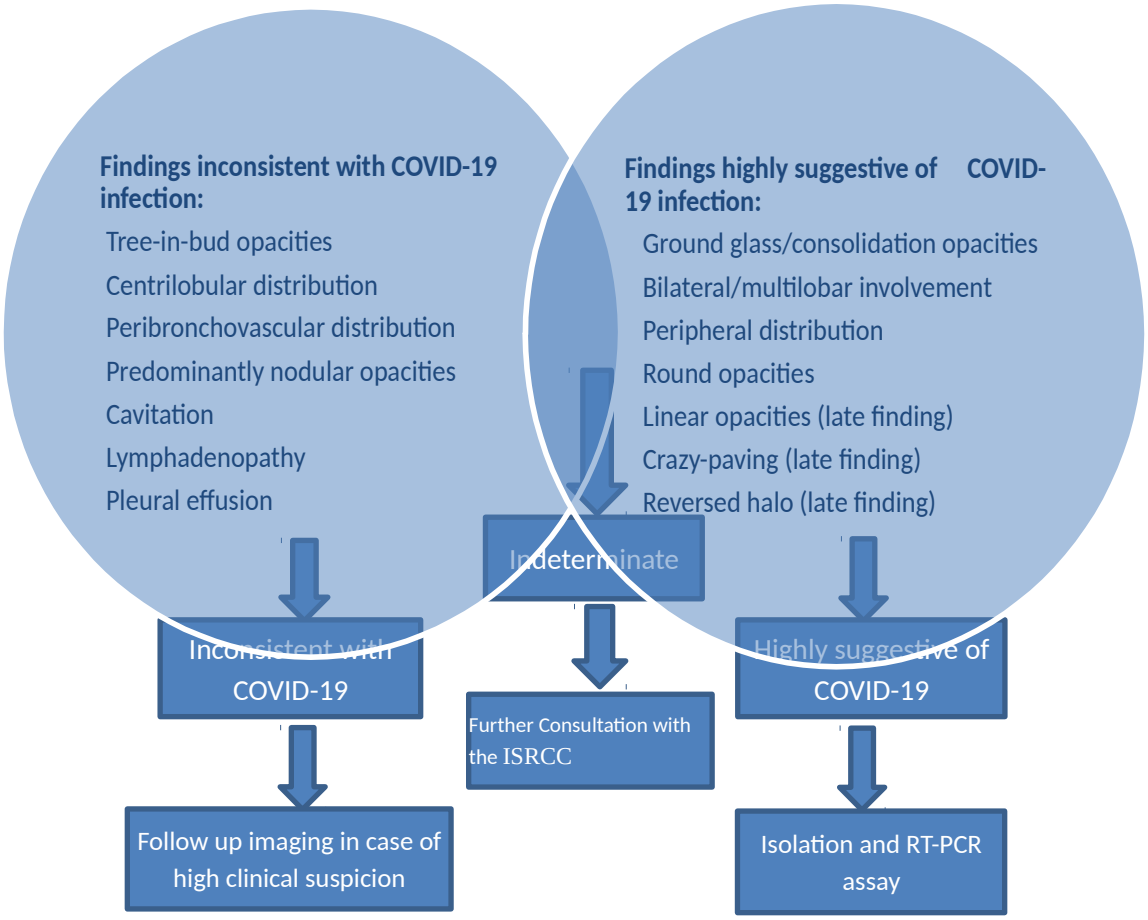
- Defined specific criteria for reporting radiologic features of suspected patients imaging as normal, inconsistent, or highly suggestive of COVID-19 (Fig. 1).
  Although this primary reporting template has been effective so far for the classification of patients, it might undergo changes after more cases have been reviewed.
- Provided suggestions for complementary diagnostic/ therapeutic actions based on patients radiology report
- Investigating the possibility of using a comprehensive national / regional PACS for storing and sharing imaging of patients

The primary results have shown that low-dose CT-scan, which is a widely available and relatively inexpensive imaging test in Iran, is beneficial for the diagnosis of COVID-19 in suspicious symptomatic patients. Also, the current Thoracic CT Scan reporting template designed by ISRCC could be advantageous for classifying patients and predicting which patients should be treated in outpatient setting and discharged and which patients require further evaluation and monitoring, and even admission to ICU, if necessary.

We believe that the following actions conducted and supervised by the ISRCC have been successful in enhancing the radiologic management of this crisis and have facilitated the

diagnosis and control of COVID-19. Thus, we are delighted to share our experience with other medical societies across the world to reduce the burden of this disease.

Figure 1. Reporting Template of HRCT* of patients suspicious of COVID-19 provided by the Iranian Society of Radiology COVID-19 Consultants Group (ISRCC).



*High resolution CT-scan

Highly suggestive: Presence of any highly suggestive findings without presence of inconsistent findings

Inconsistent: Presence of inconsistent findings

Indeterminate: Presence of multiple highly suggestive findings with one or more inconsistent findings.

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Revision (1)

Here, you can see the **Reviewers**, **Associate Editors** and **EICs'** comments from the beginning to the end of the revision process.

Madjid Shakiba: Reviewer | **Revision** (1) — 4 Mar 2020

Dear AE,
The study is reviewed carefully. According to comments and revisions by the author, this manuscript is accepted.
Thanks

Amir Jalali: Associate Editor | **Revision** (1) — 4 Mar 2020

Dear EIC,
The revised article could be acceptable for the publication in IJR.
Regards

Mehranoosh Dolatshahi: Associate Editor | **Revision** (1) — 5 Mar 2020

Dear EIC
Based on the authors' answers to the reviewers' comments, the reviewer(s) have recommended publication.
Kind regards.

Kavous Firouznia: EIC | **Revision** (1) — 5 Mar 2020

Dear authors,
Your article is acceptable for the publication.
Regards