

## Debate of Chest CT and RT-PCR Test for the Diagnosis of COVID-19

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Editor:

It was my pleasure to read the recently published article “Efficacy of Chest CT for COVID-19 Pneumonia in France” by Herpe and colleagues (1). The authors found no significant difference for sensitivity of chest CT among regions with varying disease prevalence and concluded that chest CT was used successfully in suspicious patients for COVID-19 pneumonia as an initial diagnostic tool. These findings allow us to understand various aspects of the pandemic and will be very useful for regions where testing kits are scarce or test results have been delayed.

Although the article provides valuable information I want to draw attention to potential side effects of CT usage for the diagnosis of COVID-19. After the COVID-19 outbreak was characterized as pandemic by World Health Organization, American College of Radiology published a statement against the use of chest CT as a screening or first-line diagnostic tool for suspected COVID-19 patients (2). This statement was generated based on concerns such as the risks of patients’ exposure to radiation, minimizing the likelihood of disease transmission and decreasing the burden of the imaging facilities due to potential patient surge.

The authors reported that CT usage for all suspected patients ultimately yielded only 93 additional patients for the diagnosis of COVID-19 among CT positive and initial PCR test negative patients. When considering the large number of scanned patients (7443) in this study, the utility of chest CT as a first-line imaging tool may be questionable. Furthermore, the authors reported that the accuracy of first chest CT (90%) is lower than the first PCR (97%). These findings suggest that routine screening of COVID-19 patients with chest CT may not be beneficial at patient level.

The COVID-19 pandemic is still continuing to evolve and affects many people almost in all countries/territories around the world. If all suspected patients undergo CT scans, it may bring devastating consequences on healthcare systems. Therefore, the debate for the diagnosis of

COVID-19 remains unsolved, and rather than use of chest CT as first-line diagnostic tool for COVID-19, improvements in availability, sensitivity and turnaround times of RT-PCR tests can be a better solution.

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Response:

We would like to thank the author for showing interest in our work in which we evaluated chest CT (CCT) as a first-line diagnostic tool for suspected COVID-19 patients in combination with RT-PCR. The American College of Radiology statements are opposed to this approach, even if an update was made in March; “*As an interim measure, until more widespread COVID-19 testing is available, some medical practices are requesting CCT to inform decisions on whether to test a patient for COVID-19, admit a patient or provide other treatment (1).*” The counter arguments against the use of CCT are based on 3 main concerns: (a) Risks of radiation exposure. A recent meta-analysis shows slightly increased cancer risks from low dose ionizing radiation (2). However, possible cancer risks must be weighed against a gain in terms of population management in the event of a potentially lethal pandemic. (b) There may be an increased likelihood of disease transmission in imaging departments. This risk is also high in cases of false negative RT-PCR during the time elapsed between a RT-PCR test and the obtaining of its results. (c) Work overload in imaging departments. While this was indeed observed in France (3), it should be anticipated by radiology leaders in light of our work.

Therefore, we think that CCT is not only useful “*for regions where testing kits are scarce, or test results have been delayed*”, but also because it can provide fast results with low false negative rates (5% in our study). With a negative predictive value of 99%, the combination of CCT and RT-PCR is therefore the most efficient triage tool for helping to streamline patient flow in a spreading pandemic. Our data were recently confirmed in another publication (4). In addition, initial CCT could provide interesting prognosis information (5).

In conclusion, the author states that “*rather than use of chest CT .../..., improvements in availability, sensitivity and turnaround times of RT-PCR tests can be a better solution.*” While we agree and likewise hope for a better future, in light of the current pandemic and in the interest of our patients, a pragmatic attitude should be adopted.

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