A role for CT in COVID-19? What data really tell us so far

Radiologists have watched the coronavirus disease 2019 (COVID-19) pandemic unfold, wondering if and how imaging could be useful for diagnosis. Perhaps imaging could aid in screening or accelerate the speed of diagnosis, especially with shortages of RT-PCR.

Some radiology literature suggests a pivotal role for CT. Ai and colleagues[1] report on 1014 patients who received both RT-PCR and CT in Wuhan, China, during their epidemic. They found that 97% of cases with RT-PCR-confirmed diagnoses had CT findings of pneumonia, and conclude, "CT imaging has high sensitivity for diagnosis of COVID-19". Other investigators are less optimistic. Inui and colleagues[2] reviewed CT scans of 112 cases of RT-PCR-confirmed COVID-19 from the *Diamond Princess* cruise ship. Less than two-thirds (61%) of cases had lung opacities on CT; 20% of symptomatic patients had negative CTs.

Although extremely valuable, these results should not be overstated. The CT findings studied (eg, ground-glass opacity, consolidation) are not specific for COVID-19. Similar results would probably be found if CT were used during an influenza epidemic, for example. The positive predictive value of CT will be low unless disease prevalence is high, as we suspect it was in Wuhan. Their cohort includes "patients suspected of [COVID-19],"[2] presumably sick and possibly hospitalised, although details are not provided.

RT-PCR to diagnose COVID-19 has some limitations: the test is not universally available, turnaround times can be lengthy, and reported sensitivities vary. Nevertheless, it is the accepted standard and only positive in patients who are infected with severe acute respiratory syndrome coronavirus 2. CT findings in patients with COVID-19, on the other hand, are seen with numerous pathogens and in many non-infectious aetiologies. We believe CT does not add diagnostic value; positive results can only be believed if the pre-test probability of disease is high. Using CT diagnostically is not known to provide clinical benefit and could lead to false security if results are negative. If COVID-19 is suspected, patients should be isolated pending confirmation with (multiple) RT-PCR tests, or until quarantine has lapsed. The results of a CT scan do not change this.

We feel that framing CT as pivotal for COVID-19 diagnosis is a distraction during a pandemic, and possibly dangerous. Safely using CT to study COVID-19 patients is logistically challenging and can overwhelm available resources. Even with proper cleaning protocols, healthcare professionals and CT scanners could become vectors of infection to other vulnerable patients who require imaging. We urge caution and encourage using published guidelines[3] regarding use of CT imaging.

We declare no competing interests.

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