The use of radiological imaging alongside reverse transcriptase PCR in diagnosing novel coronavirus disease 2019: a narrative review

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Abstract: (248 words)

Background: The diagnosis of novel coronavirus disease 2019 (COVID-19) has been a challenge in many countries due to nonspecific symptoms and variable incubation periods. While the current reference test is reverse transcriptase polymerase chain reaction (RT-PCR), many studies have reported higher sensitivities of computed tomography (CT) scans, and suggested that they can be used in the diagnosis of COVID-19 alongside RT-PCR.

Methods: A comprehensive search of PubMed and WHO coronavirus database was carried out. Research articles that discuss the use of RT-PCR and/or CT scans for screening or diagnosis of COVID-19 were selected. The data collected was analyzed and used to compare the sensitivity and specificity of CT scans relative to RT-PCR.

Results: Many studies have shown that RT-PCR is not sensitive enough to be relied on solely, albeit with variable findings. Studies have reported sensitivities as low as 30% due to certain limitations, while others reported sensitivities as high as 79%. On the other hand, the majority of studies about CT scans reported significantly higher sensitivities than RT-PCR, going as high as 98%. However, the published data about specificity of CT scans at the time of publication was scarce and showed major inconsistencies. Generally, a low specificity was reported (25%-71.9%).

Conclusion: Despite many studies showcasing a higher sensitivity of CT scans relative to RT-PCR, there is significant variability between studies. Therefore, the data is neither coherent nor reliable, demanding more rigorously-designed studies with large sample sizes to better understand the role of CT scans in COVID-19 diagnosis.