





Chest radiography or computed tomography for COVID-19 pneumonia? Comparative study in a simulated triage setting

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This study does not support the routine use of CT to stage disease extent in COVID-19 pneumonia, despite superior interobserver agreement, as chest radiography extent is an equally powerful prognostic determinant <https://bit.ly/3rdJuxj>

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Abstract

Introduction For the management of patients referred to respiratory triage during the early stages of the severe acute respiratory syndrome coronavirus type 2 (SARS-CoV-2) pandemic, either chest radiography or computed tomography (CT) were used as first-line diagnostic tools. The aim of this study was to compare the impact on the triage, diagnosis and prognosis of patients with suspected COVID-19 when clinical decisions are derived from reconstructed chest radiography or from CT.

Methods We reconstructed chest radiographs from high-resolution CT (HRCT) scans. Five clinical observers independently reviewed clinical charts of 300 subjects with suspected COVID-19 pneumonia, integrated with either a reconstructed chest radiography or HRCT report in two consecutive blinded and randomised sessions: clinical decisions were recorded for each session. Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and prognostic value were compared between reconstructed chest radiography and HRCT. The best radiological integration was also examined to develop an optimised respiratory triage algorithm.

Results Interobserver agreement was fair (Kendall's $W=0.365$, $p<0.001$) by the reconstructed chest radiography-based protocol and good (Kendall's $W=0.654$, $p<0.001$) by the CT-based protocol. NPV assisted by reconstructed chest radiography (31.4%) was lower than that of HRCT (77.9%). In case of indeterminate or typical radiological appearance for COVID-19 pneumonia, extent of disease on reconstructed chest radiography or HRCT were the only two imaging variables that were similarly linked to mortality by adjusted multivariable models

Conclusions The present findings suggest that clinical triage is safely assisted by chest radiography. An integrated algorithm using first-line chest radiography and contingent use of HRCT can help optimise management and prognostication of COVID-19.

