

Enhancing Diagnostic Efficiency of COVID-19



Coronavirus disease has spread throughout the world, and the need for rapid diagnosis of infected patients has become extremely important. Common clinical symptoms of COVID-19 include fever, cough, headache or fatigue. Comorbidities include respiratory failure, acute respiratory distress syndrome (ARDS), acute renal injury and acute cardiac injury.

Radiological examinations have proven to be very useful for the detection and management of COVID-19. The reverse transcription-polymerase chain reaction (RT-PCR) test is the reference standard for the diagnosis of COVID-19 infection. However, in several COVID-19 cases, it was observed that pulmonary investment on CT could have negative results of RT-PCR. This could be due to several reasons, including the limitation of nucleic acid detection technologies, inappropriate sampling methods, low viral load, or improper timing of sampling for RT-PCR.

A study was conducted to develop a predictive model and scoring system to enhance the diagnostic efficiency for COVID-19. 88 confirmed COVID-19 patients with pneumonia and 80 non-COVID-19 patients with pneumonia of other origins were enrolled from January 19 to February 6, 2020. All suspected COVID-19 patients were tested by RT-PCR. Throat and swab specimens were obtained. The RT-PCR test was repeated for 21 patients because the first test result was negative. Cases with two consecutive negative results were considered non-COVID-19 patients.

Clinical data and laboratory results for these patients were collected, and their CT features and scores were reviewed. Scores were calculated on the basis of the size of the pneumonia lesion and were graded within a range of 1 to 4. Researchers also evaluated air bronchogram, tree-in-bud sign, crazy-paving pattern, subpleural curvilinear line, bronchiectasis, air space, pleural effusion, and mediastinal and/or hilar lymphadenopathy.

Findings showed that the number of affected lobes and segments, segments with peripheral, consolidation, and patchy lesions in the positive group, was significantly higher than that in the negative group. The air bronchogram, crazy-paving pattern, subpleural curvilinear line, and bronchiectasis were also significantly more common in the positive group than in the negative group.

The findings showed that distinction of COVID-19 was possible with high test quality parameters. Patients with COVID-19 had lower leukocyte count compared with non-COVID-19 patients. Overall, the study established a scoring system that could be helpful in predicting COVID-19 and could help clinicians identify positive cases until they receive the results of RT-PCR tests.

Source: [European Radiology](#)

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