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LETTER TO THE EDITOR

SARS-CoV-2 RT-PCR and Chest CT, two complementary approaches for COVID-19 diagnosis

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We red with attention the manuscript of Duan et al. published online on May 26th, 2020 [1]. The authors presented well-described abnormalities of chest computed tomography (CT) findings in 25 SARS-CoV-2-infected patients and suggest positioning this tool. However, we would like to comment on two of their conclusions.

Some COVID-19 patients could initially present with a negative SARS-CoV-2 RT-PCR, but a chest CT evocative of COVID-19. A further respiratory sample is consequently performed with, as reported in their manuscript, a positive RT-PCR result. As written in their manuscript, "Characteristic chest CT imaging features could appear earlier than the viral nucleic acid detection" [1], the authors suggest a superiority of chest CT in comparison to RT-PCR in the early stage of the disease. The first assessments of chest CT showed high performances of the exam from the onset of the symptoms [2]. But, it was reported in the early phase (0–2 days) that 56% of chest CT were normal while 100% of RT-PCR were positive [3]. Indeed, the SARS-CoV-2 viral load is highest during the symptom onset and then trends to decrease with time [4]. Consequently, the diagnostic value of both exams is probably related to epidemiological, clinical, and analytical performances for RT-PCR or diagnostic criteria for chest CT.

False-negative of RT-PCR are not unusual. In order to provide accurate results, the World Health Organization has issued guidelines for SARS-CoV-2 laboratory testing [5]. However, it was suggested the rate of false-negative is higher using RT-PCR assays displaying a single viral target [6, 7]. Nevertheless, false-negative are likely related to preanalytical limitations such as the method of sampling. Indeed, nasopharyngeal swabs are probably more accurate than throat or nasal swabs, but there are more difficult to perform [8, 9]. Furthermore, as SARS-CoV-2 viral load in respiratory sample decrease with the duration of the disease [4], it is likely the patients presenting some days after the onset of the symptoms could display a negative RT-PCR result. Elsewhere, it was suggested upper respiratory tract samples could remain negative in almost exclusive pulmonary diseases [10].

The authors also suggested using "CT and epidemiological history as the primary clues and clinical symptoms and routine laboratory tests as the secondary clues for the early clinical diagnosis of suspicious patients to implement isolation" while awaiting RT-PCR results [1]. However, in our opinion, this strategy is not suitable as chest CT display high specificity but low sensitivity mainly in patients presenting within the first 4 days of the disease [11]. Consequently, some infected-patient would display a chest CT not evocative of COVID-19. Using such a strategy could, therefore, encourage to stop infection prevention and control (IPC) measure before the RT-PCR result was obtained. Finally, generating a contrary effect to what expected and increasing the risk of transmission [12]. Therefore, when RT-PCR is not easily available, we emphasize IPC should be implemented in all suspected patients on the basis of epidemiological, clinical, or radiological findings. These measures should be stopped only when the diagnosis is excluded.

In conclusion, as for numerous infectious diseases, the diagnosis of COVID-19 requires a global analysis based on epidemiological, clinical, and complementary exams. These latters should be interpreted according to their advantages

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and limitations. As a part of this strategy, chest CT is a mainstay when RT-PCR results could not be provided in less than 24 h or in cases of suspected false-negative of the method. Serological tests, recently made available, have also a place of choice in this context.

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Compliance with ethical standards

Conflict of interest The authors declare they have no conflict of interest to declare.

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