CT screening for early diagnosis of SARS-CoV-2 infection

Authors' reply

We appreciate the concerns raised by Yongshun Huang and colleagues regarding our Article[1] on radiological findings in coronavirus disease 2019 (COVID-19). During the outbreak of COVID-19 in China in January, and February, 2020, timely diagnosis was a crucial step for infection control, especially in the epidemic area of Wuhan, Hubei province. However, RT-PCR kits were not sufficiently provided to hospitals in Wuhan until Jan 16, 2020. Before then, there was less capacity of kits to meet the rapidly increasing clinical demand. Furthermore, the total positive rate of RT-PCR for throat swab samples was reported to be less than 60%.[2] The diagnostic sensitivity of viral pneumonia by chest radiography was relatively low,[3] whereas CT had a high sensitivity for diagnosis of COVID-19, making it a potential primary tool for COVID-19 detection in epidemic areas.[2] Additionally, according to the guideline for diagnosis and treatment of COVID-19 by the Chinese Ministry of Health (fifth trial edition),[4] clinically suspected cases in Hubei province were mainly those with imaging features consistent with pneumonia.

We agree that there should be clear criteria for CT use in diagnosis of COVID-19. In fact, we do not recommend CT for screening or early diagnosis in all areas or for all populations. In our study, group 1 (preclinical) included health-care workers (ten nurses and five physicians) from two hospitals in Wuhan, who were on the frontline during the outbreak peak. All 15 participants had close contact with confirmed cases and willingly underwent CT scanning as a screening measure. Our Article retrospectively included this group, mainly to illustrate the imaging findings in the subclinical phase, which might also be incidentally found in patients who are imaged for other reasons. Based on this discovery in an epidemic area, we have proposed the potential role of CT in asymptomatic high-risk individuals with a history of exposure to COVID-19 patients in epidemic areas. Compared with another recent publication,[5] the discrepancy in CT positive rates might be attributed to variable sample sizes, different demographic features, and potential retrospective selection bias.

In the epidemic area, all CT scans were done in accordance with strict infection control protocol to avoid cross-infection. We agree that use of CT for screening or diagnosis has a disproportionate risk–benefit ratio. Fortunately, under well controlled epidemic conditions in Wuhan, the RT-PCR assay or severe acute respiratory syndrome coronavirus 2 antibody test are the first choices for screening for COVID-19 at present.

We declare no competing interests.

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