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LETTER TO THE EDITOR

Response to RMED-D-22–00,258.R1

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We are grateful to Drs. Pathum Sookaromdee and Viroj Wiwanitkit for their interest and comments on our article [1].

First, they suggest an important concern for applying the algorithm is the concurrent medical problem. In many settings, such as in developing Asia, there is a high incidence of background lung problem such as tuberculosis, etc. This software was basically applied the machine learning-based radiological finding evaluation software, which was reported in the past literatures [2, 3]. This software was determined as having the capability for automatic assessment of CT findings within the lung, and divided all lung CT findings into seven radiological classifications based on the following glossary terms for thoracic imaging published by the Fleischner Society [4]: (1) normal lung, (2) emphysema, (3) nodular lesion, (4) consolidation, (5) ground-glass opacity (GGO), (6) reticulation and (7) honeycomb. This software had substantial agreement for seven radiological finding evaluations on standard references, and its' differentiation accuracy was 82.3%. These results had no significant differences with consensus reading by three investigators, who were consisted with two board-certified chest radiologists and a board-certified general radiologist with more than 20-years experiences, without the software and standard reference. Therefore, this software has a potential to assess background lung problems like chest radiologists or a general radiologist with more than 20-years experiences. In addition, radiological findings in COVID-19 pneumonia in this study were focused on ground-glass opacity and consolidation. Although some influence might be speculated, tuberculosis or non-tuberculous mycobacteria might be little affection to this study results. To directly answer the query from Drs. Sookaromdee and Wiwanitkit, we hope to collaborate with researchers in developing countries with large COVID-19 cohort as future study.

Second, they suggested concerns the utility of this software in the pre-investigation asymptomatic COVID-19

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pneumonia or the repeated COVID after a previous asymptomatic COVID-19 pneumonia. This software is currently assessed for Japanese FDA approval and tested in asymptomatic COVID-19 pneumonia patients, although the data have not been published in this time point. In the multicenter study for obtaining Japanese FDA approval, when the software assessed CTs in asymptomatic COVID-19 pneumonia patients with radiological findings, this software is accurately diagnosed as "positive" based on RSNA Expert consensus document on reporting chest CT findings related to COVID-19 [5, 6]. However, when evaluated CTs in asymptomatic COVID-19 pneumonia patients without radiological findings, this software could not diagnose as true-positive. Therefore, we consider that it may be important for diagnosis of COVID-19 with this software in asymptomatic or symptomatic patients and evaluate disease severity as having lung abnormalities, especially ground-glass opacity and consolidation, for better patients' management in routine clinical practice.

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