Supplementary

Appendix 1

Response to "Clinical scoring demonstrates the greater predictive capability for melioidosis pneumonia"

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We sincerely thank Prof. Mohapatra for his interest in our research and his valuable feedback (1). The following are our responses.

First, we acknowledge that microbial testing is the gold standard for diagnosing melioidosis pneumonia. However, it usually takes a long time and its sensitivity may vary, affecting its stability and prognostic value. In our study's validation phase, we collected multi-center data. Due to the low number of severe cases, we controlled the ratio of positive to negative samples in the multi-center data to ensure the rationality of the test samples, and then performed random sampling for the Gaussian process regression (GPR) validation.

Regarding multiple computed tomography (CT) scans, we agree that repeated CT scans without clear indications should be avoided. Our work focused on the necessary scans for initial lung-onset symptoms (no enhancement or repeat scans required). Multiple CT scans were conducted based on other clinical needs. We utilized these sequential CT data to improve the accuracy of prognostic evaluation and calculate the assessment accuracy at different stages. For cases with only one CT scan, we also evaluated and validated the prognosis based on the time from onset to the CT scan.

Chest X-rays can provide important information about the location, extent, and related characteristics of pneumonia (such as the affected lobes and the presence of pleural effusion and cavity formation) (2). However, for melioidosis pneumonia, X-rays (with a diagnostic sensitivity of 65%) are far more inferior to CT in terms of sensitivity and detail of lesions (3-5). This study aimed to quantitatively assess lung conditions and predict patient prognosis based on these assessments, making X-rays not applicable for this study.

Regarding the incubation period, our results showed that the incubation period did not significantly affect the outcomes. We included patients with initial respiratory symptoms and radiographic evidence, with diagnosing melioidosis pneumonia as the primary condition.

Early diagnosis is an important predictor of prognosis. But our research focused on predicting the prognosis of existing cases rather than early diagnosis. The CT-score incorporates admission time information (representing the time point when the patient had completed diagnosis and began treatment), effectively combining the start of treatment with CT imaging to provide reference for doctors.

Discrepancies between imaging and clinical changes are common. Our study aimed to confirm and explain the progression and prognosis of melioidosis pneumonia

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from different dimensions, rather than comparing these differences. Evaluations can be made through imaging, blood tests, clinical scores, and other methods.

Finally, while clinical evaluation remains crucial, various scoring systems have been proposed in recent years to better characterize diseases. We have proposed a new method, which has been trained and tested through multiple machine learning methods. This method demonstrates good interpretability due to the incorporation of radiomic features Indeed, most scoring systems have not yet been widely applied. Each research outcome requires extensive practical validation from creation to widespread use. Therefore, we encourage clinicians to be more open and innovative in their work to validate and utilize more of the latest research findings.

In summary, the diagnosis and treatment of melioidosis pneumonia mainly rely on the experienced clinicians' judgment and early treatment of experienced clinicians. However, in underdeveloped areas with limited doctor resources and insufficient antibiotics, CT scoring can assist clinicians with dynamic intervention strategies. Facing the severe diagnosis and treatment situation of melioidosis pneumonia, we need a large number of researchers to break through the constraints of traditional thinking and provide more solutions for the challenging situations in melioidosis pneumonia, gradually achieving the goal of low mortality and low treatment costs for patients (6-9).

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