

Discussion Letter

Radiomics and Clinical Data for the Diagnosis of Incidental Pulmonary Nodules and Lung Cancer Screening: Correspondence



To the Director,

We would like to share ideas on the publication “Radiomics and Clinical Data for the Diagnosis of Incidental Pulmonary Nodules and Lung Cancer Screening: Radiolung Integrative Predictive Model.”¹ By combining clinical data and deep learning techniques, this study attempted to construct a radiomic model for predicting the malignancy of pulmonary nodules (PNs). The study examined pulmonary function tests and epidemiological risk variables in 97 PNs from 93 patients. The radiomic model extracted visual features using a pre-trained convolutional network and fed the results into an optimized neural network. The outcomes demonstrated the radiomic model's 86% positive predictive value (PPV), 79% accuracy, and 0.67 area under the curve (AUC).

One potential weakness of the study is the radiomic model's small AUC of 0.67, indicating a moderate level of accuracy in predicting malignancy. This shows that the radiomic model's performance should be improved further. Furthermore, the study did not offer precise information on the exact features collected by the convolutional network, which may limit the interpretation of the results.

This study raises the question of whether the findings may be generalized to other patient populations or imaging technology. The study sample was limited, and it may not be indicative of the whole population with PNs. Future research could benefit from integrating a bigger and more diverse patient group to validate the findings and evaluate the model's efficacy in other scenarios.

In order to improve the model's predicted accuracy even more, future research areas can look into other clinical markers or imaging modalities. Incorporating more extensive clinical data, like genetic

data or biomarkers, may enhance the model's functionality. Furthermore, enhancing the radiomic model's interpretability by the identification of particular elements that augment the predictive accuracy may yield significant insights for clinical decision-making. To evaluate the model's practicality, more research might concentrate on independent cohorts for external validation of the model.

Authors' contribution

HP 50% ideas, writing, analyzing, approval.
VW 50% ideas, supervision, approval.

Conflict of interest

None.

Reference

1. Baeza S, Gil D, Sanchez C, Torres G, Carmezim J, Tebé C, et al. Radiomics and clinical data for the diagnosis of incidental pulmonary nodules and lung cancer screening: radiolung integrative predictive model. Arch Bronconeumol. 2024, <http://dx.doi.org/10.1016/j.arbres.2024.05.027>.

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