

INTRODUCTION

❖ **Clinical background:**
Microvascular invasion (MVI) is an important indicator of prognosis for non-small cell lung cancer^{1, 2, 3}.

❖ **AIM:** To identify CT-based radiological features in predicting MVI in part-solid lung adenocarcinoma.

METHODS

- This retrospective study included patients who underwent surgical resection of part-solid nodule with pathologically diagnoses of lung adenocarcinoma in our institution between July 2023 and December 2024.
- Preoperative CT features suggestive of MVI were evaluated for all patients. Interobserver and intraobserver agreement was assessed using the kappa coefficient.
- Univariate and multivariate logistic regression analyses adjusted for sex, age and smoking status were used to identify independent radiological factors associated with MVI.
- Model performance was evaluated using the area under the receiver operating characteristic curve (AUC).

RESULTS

- Among the 1,908 part-solid lung adenocarcinoma, 230 (12.1%) had MVI-positive. Of all 1908 patients, the median age was 59 years (IQR: 50-67) and 1250 (65.5%) were female. Invasive adenocarcinoma was diagnosed in 757 (86.7%) patients.
- All CT features reached moderate to excellent intra- and inter-observer agreement.
- In Multivariable analysis, solid component size, margin, spiculation, lobulation, peritumoral interstitial thickening, pleural retraction, and air bronchogram independently predicted MVI in the overall cohort.
- The model achieved an AUC of 0.885 (95% CI: 0.863–0.908). In CTR ≤0.5 subgroup, overall tumor size, solid component size, margin, and air bronchogram were independent factors, with an AUC of 0.875 (95% CI: 0.833–0.917). In CTR >0.5 subgroup, solid component size, margin, spiculation, lobulation, peritumoral interstitial thickening, and pleural indentation were independently associated with MVI, yielding an AUC of 0.855 (95% CI: 0.825–0.886).

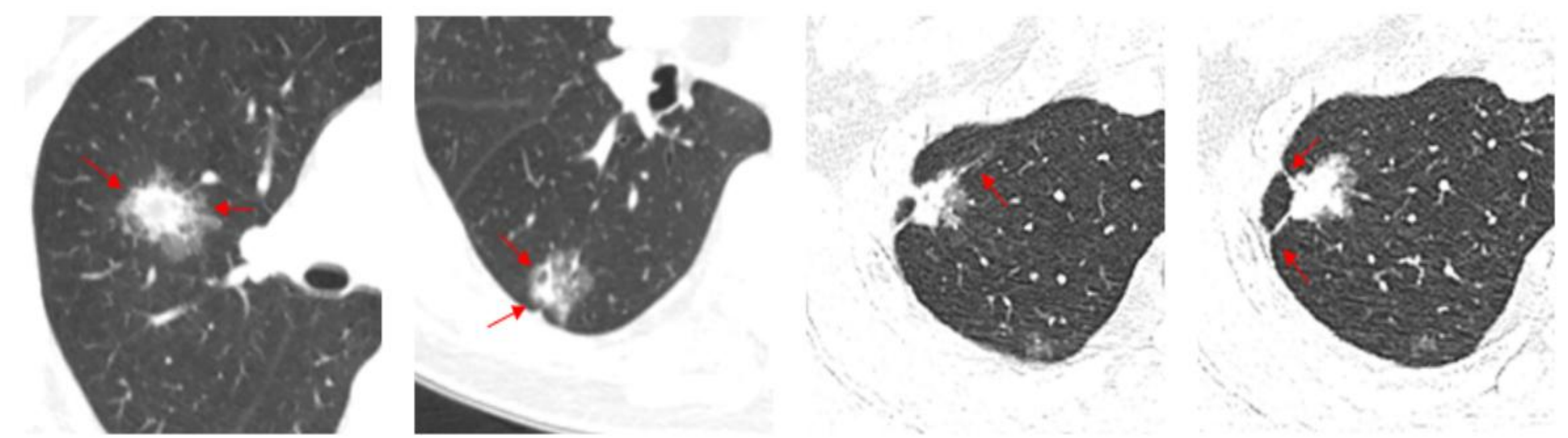


Figure 1: Examples cases of part-solid adenocarcinoma with microvascular invasion.

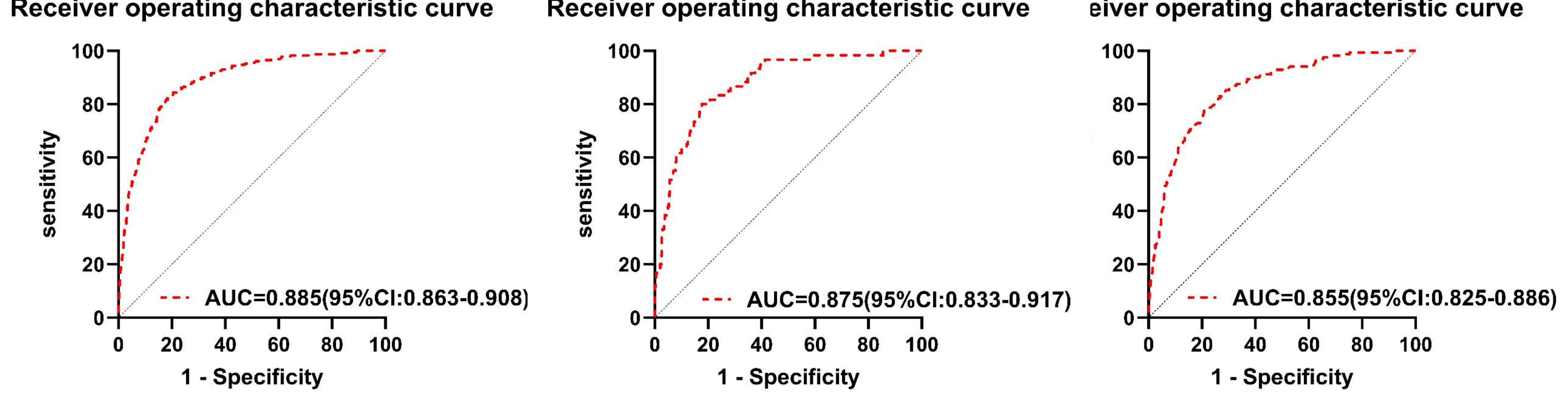


Figure 2: The area under the receiver operating characteristics curve (AUC) of CT-based radiological model in predicting microvascular invasion in part-solid lung adenocarcinoma. A: overall cohort; B: consolidation-to-tumor ratio ≤ 0.5 subgroup; C: consolidation-to-tumor ratio > 0.5 subgroup

DISCUSSION AND CONCLUSION

- Solid component size, margin, spiculation, lobulation, peritumoral interstitial thickening, pleural retraction, and air bronchogram independently predicted MVI.
- CT-based radiological model demonstrated good performance for predicting MVI in part-solid lung adenocarcinoma.

REFERENCES & ACKNOWLEDGEMENTS

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We thank all participating institutions and investigators for their contributions to this study.