



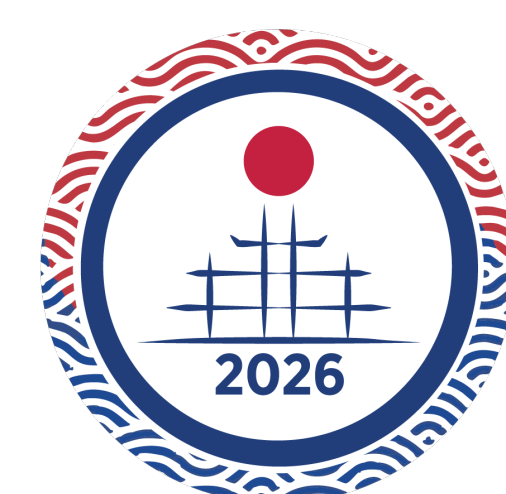
P1.037:A ctDNA-Based Multivariable Model Significantly Improves Early Detection of Non-Small Cell Lung Cancer

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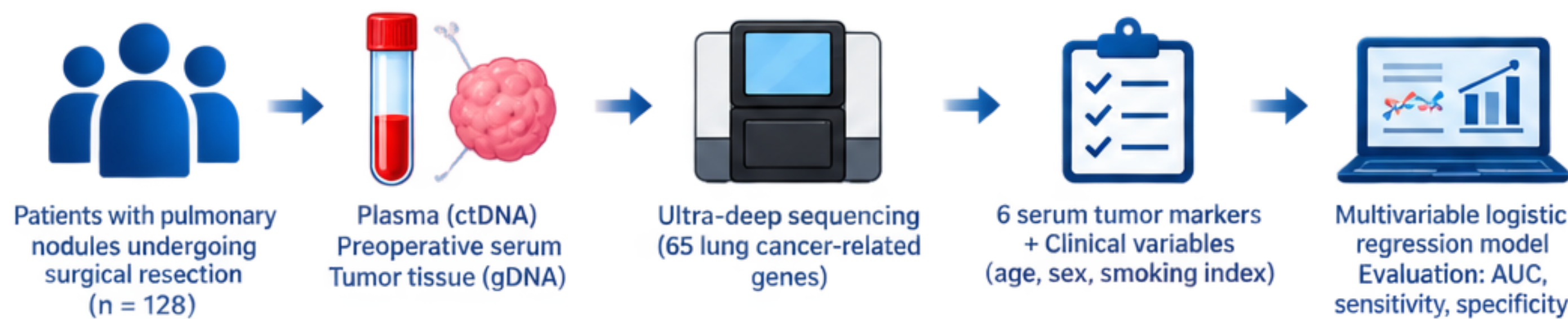
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INTRODUCTION

- Early detection is essential for reducing lung cancer mortality.
- Although low-dose computed tomography (LDCT) is widely used for screening, its high false-positive rate limits clinical utility.
- Circulating tumor DNA (ctDNA) has emerged as a promising noninvasive biomarker; however, its sensitivity in early-stage disease remains limited.
- This study aimed to evaluate the diagnostic performance of ctDNA and to develop a multivariable model integrating ctDNA with clinical and serum biomarkers for early detection of non-small cell lung cancer (NSCLC).

METHODS



- Postoperative pathology served as the reference standard to classify patients as NSCLC or benign nodules.
- Six preoperative serum tumor markers: NSE, CYFRA21-1, CEA, ProGRP, CA-125, and SCC-Ag.
- Variables with $P < 0.05$ in univariate analysis were included in the multivariable logistic regression model.
- Diagnostic performance was evaluated using the area under the curve (AUC), along with sensitivity and specificity at the optimal cutoff.

DISCUSSION AND CONCLUSION

Actionable Take Away Message

- A ctDNA-based multivariable model significantly improves early detection performance compared with ctDNA alone.
- The model achieves high sensitivity and specificity in a predominantly stage I population.
- This approach may serve as a promising noninvasive strategy for early lung cancer detection and risk stratification of pulmonary nodules.

Future Direction for Research

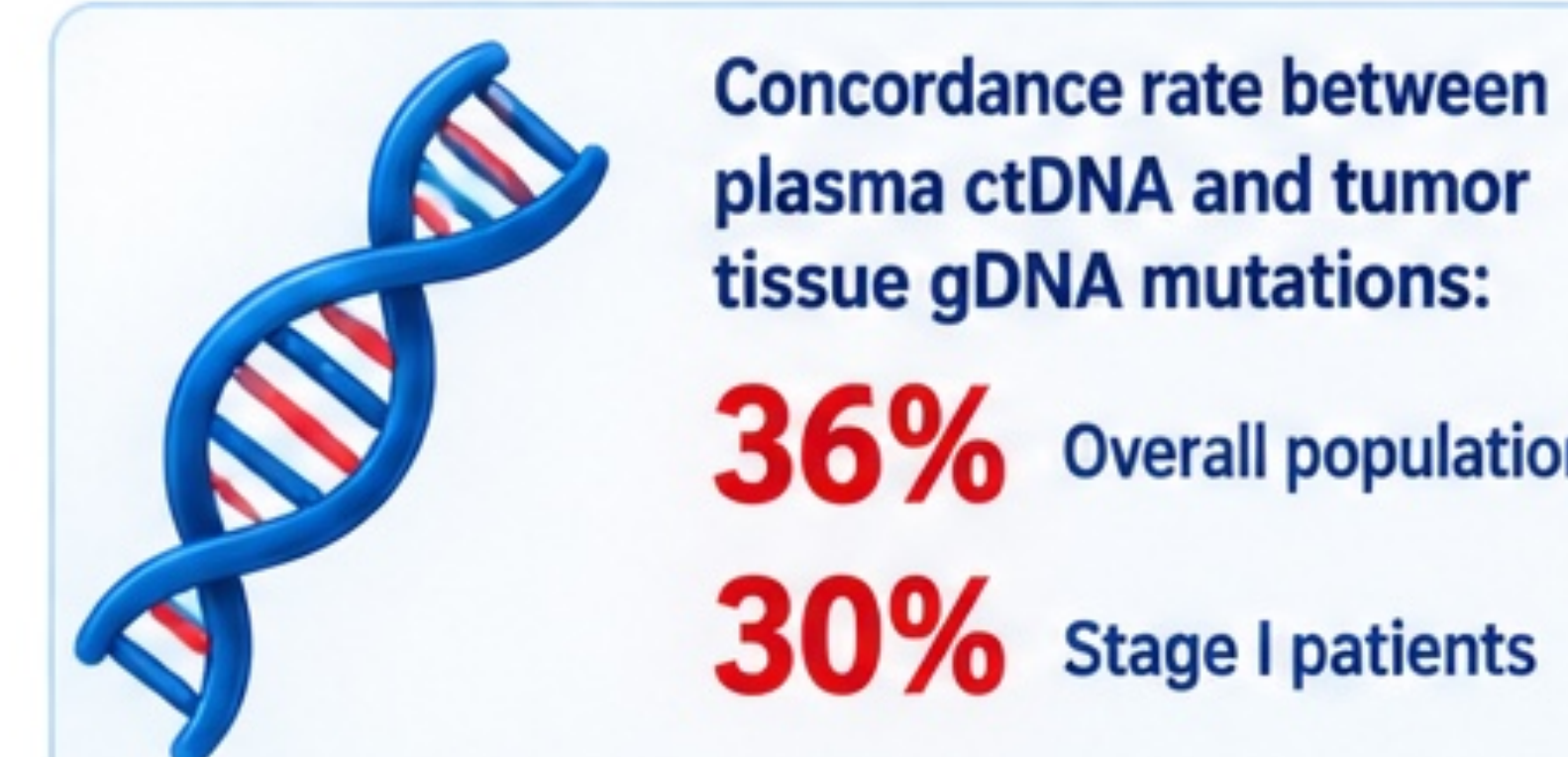
- Prospective multicenter studies with larger cohorts to validate the model.
- Integration with radiomics and other liquid biopsy markers to further enhance accuracy.
- Evaluation of cost-effectiveness and clinical utility in real-world screening settings.

REFERENCES & ACKNOWLEDGEMENTS

1. Abbosh C, et al. Nature. 2017;545:446–451.
2. Chabon JJ, et al. Nature. 2020;580:245–251.
3. Abbosh C, et al. Nature. 2023;616:553–562.
4. Mazzone PJ, et al. Cancer Discov. 2024;14:2224–2242.

RESULTS

STUDY POPULATION



DIAGNOSTIC PERFORMANCE

	ctDNA (Alone)	Multivariable Model
AUC (95% CI)	0.824 (0.727–0.922)	0.925 (0.870–0.979)
Sensitivity	—	94.9%
Specificity	—	92.9%
Youden Index (Optimal Cutoff)	—	0.737

★ At the optimal cutoff (Youden index: 0.737), the multivariable model achieved a sensitivity of **94.9%** and a specificity of **92.9%**

DIAGNOSTIC PERFORMANCE COMPARISON

