



Prognostic Value of ROS1 Rearrangement in Lung Adenocarcinoma Stratified by Clinicopathologic and Radiological Features: A Retrospective Cohort Study

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INTRODUCTION

The prognostic significance of ROS1 rearrangement in lung adenocarcinoma (LUAD) remains a subject of debate. This study systematically evaluated the clinicopathologic characteristics and prognostic impact of ROS1 rearrangement in early- and advanced-stage LUAD, stratified by distinct clinicopathologic and radiological features.

METHODS

We retrospectively analyzed comprehensive clinical data and follow-up records of patients with resected invasive LUAD who underwent ROS1 testing between 2018 and 2020. Patients were stratified by tumor stage (I vs. II–III), radiographic pattern (part-solid vs. solid), histologic differentiation (moderate vs. poor), and pathologic aggressiveness (passive vs. aggressive, defined by the presence of lymphovascular invasion, visceral pleural invasion, or spread through air spaces). The prognostic significance of ROS1 rearrangement was assessed within each subgroup.

DISCUSSION AND CONCLUSION

Actionable Take Away Message

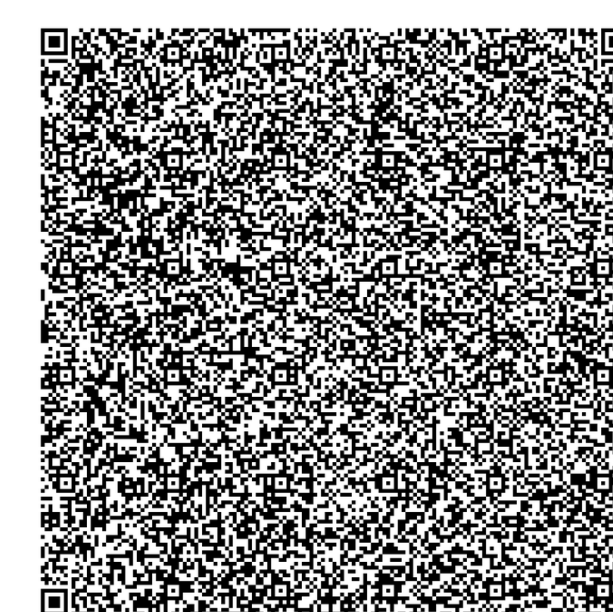
- ROS1 rearrangement independently predicted worse recurrence-free survival (RFS) and overall survival (OS) in stage II–III, solid, poorly differentiated, and aggressive LUAD subgroups, supporting risk-stratified surveillance.

Future Direction for Research

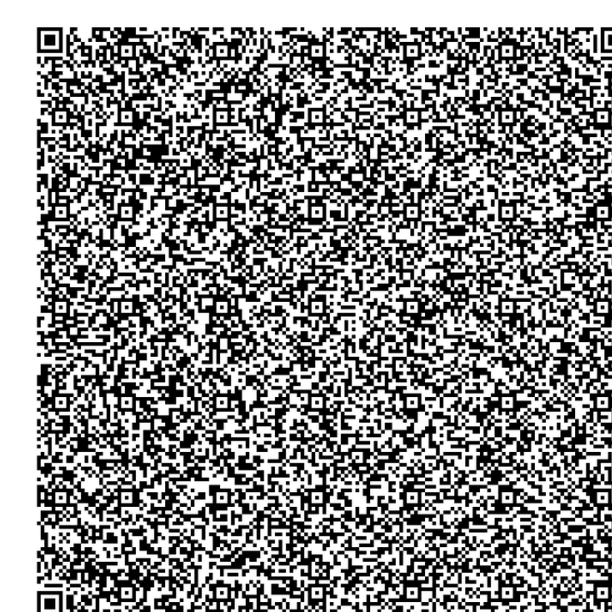
- Prospective validation and molecular characterization of ROS1-rearranged tumors may refine subgroup-specific prognostication and guide personalized surveillance and treatment, however, the generally favorable survival outcomes of early-stage LUAD may obscure its prognostic value.

REFERENCES & ACKNOWLEDGEMENTS

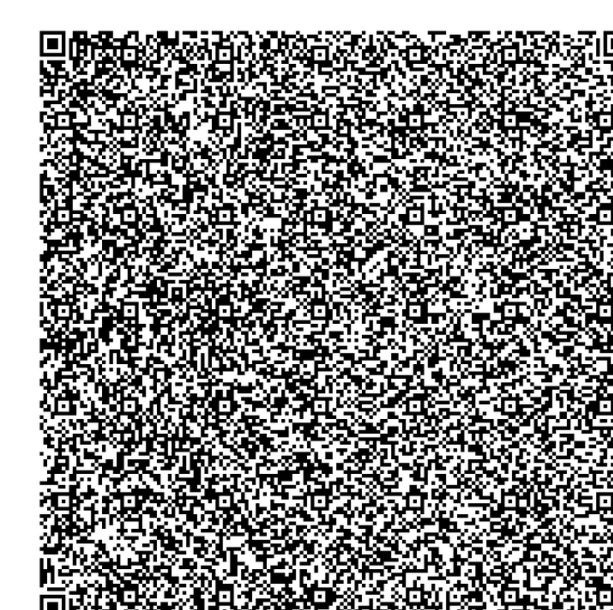
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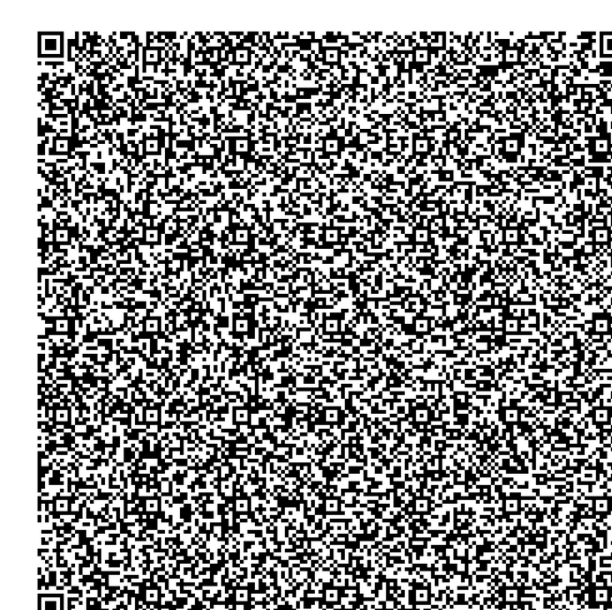
References 1-10



References 11-20



References 21-30



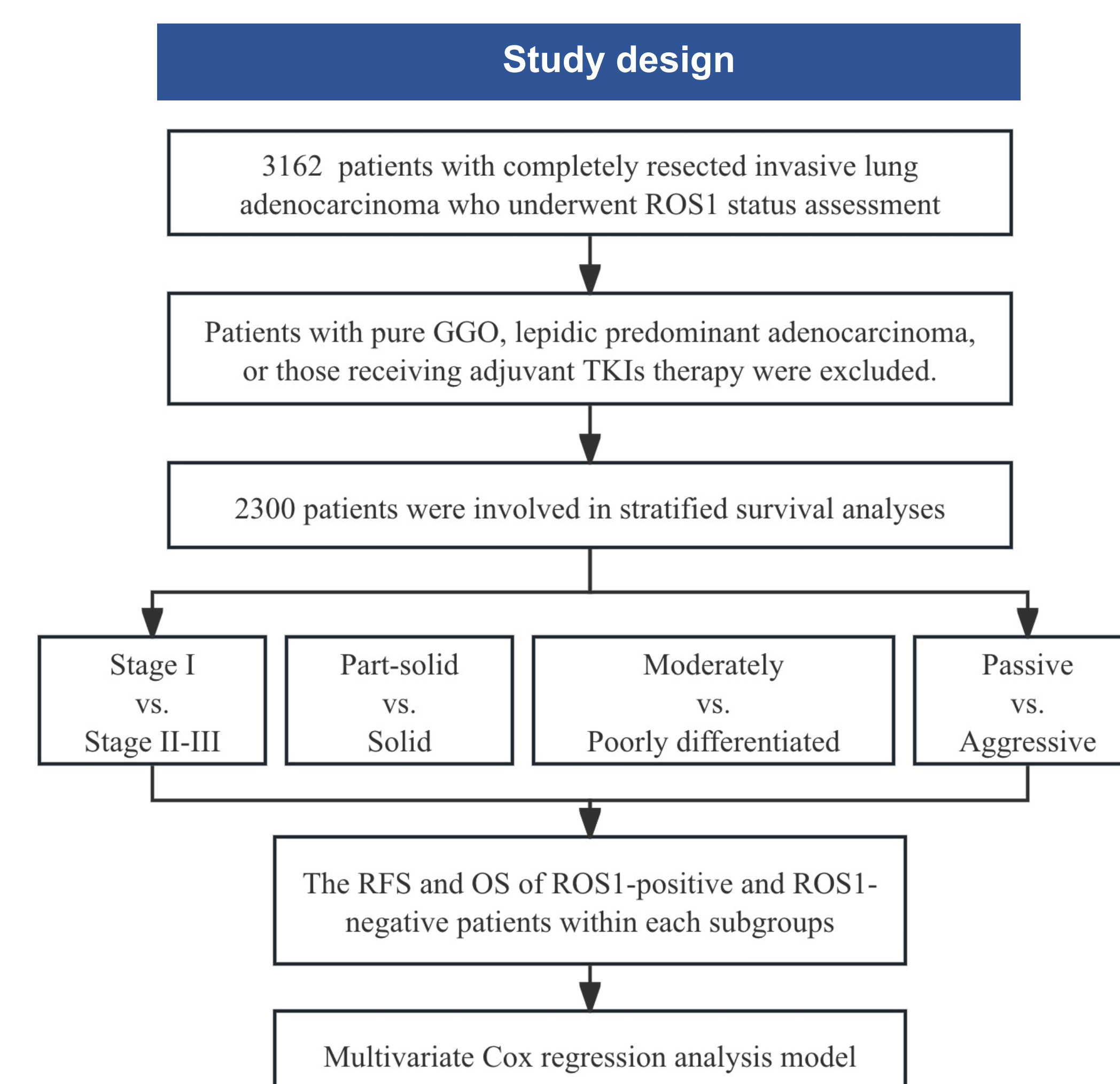
References 31-39

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RESULTS

Among 3,162 enrolled patients, 145 (4.5%) were ROS1 rearrangement-positive. ROS1 rearrangement was associated with non-smoking status, pure solid nodules, poor differentiation, and lymphovascular invasion. ROS1 rearrangement was correlated with significantly worse recurrence-free survival (RFS) and overall survival (OS) in patients with stage II–III disease, solid radiographic pattern, poor differentiation, and aggressive pathologic features. In contrast, RFS and OS were comparable between ROS1-positive and -negative patients in the stage I, part-solid, moderately differentiated, and passive pathologic subgroups. Multivariable Cox regression further confirmed these subgroup-specific findings. The rate of bone metastasis was significantly higher in ROS1 rearrangement-positive than in ROS1 rearrangement-negative patients.



Key findings

- 145/3,162 (4.5%) ROS1-rearranged LUADs; enriched in never-smokers, solid nodules, poor differentiation, and LVI.
- Worse RFS and OS only in stage II–III, solid, poorly differentiated, and aggressive subgroups (multivariable-adjusted).
- Bone metastasis: 6.7% in ROS1-positive vs 3.1% in ROS1-negative ($P = 0.047$).

