

EP12.13: Toward Clinical Use of MRI-Based AI Models in EGFR-Mutant NSCLC: Performance of Models Predicting Intracranial Progression

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INTRODUCTION

Predicting intracranial progression could optimise treatment timing and surveillance in EGFR-mutant NSCLC with brain metastases. MRI-based radiomics and AI offer non-invasive prediction, but their performance and clinical utility remain uncertain. We systematically evaluated published MRI-based prediction models.

METHODS

Design:

PubMed was searched from inception to 2025 for MRI-based radiomics studies predicting brain metastasis progression in EGFR-mutant NSCLC. We extracted model type, validation strategy, clinical-variable integration and performance metrics.

DISCUSSION AND CONCLUSION

MRI-based models showed variable but occasionally high discrimination, particularly when clinical and radiomic features were combined. However, calibration was rarely reported and prospective validation was absent.

Prospective multicentre validation with comprehensive performance reporting is needed before these models can guide local therapy or TKI management.

REFERENCES & ACKNOWLEDGEMENTS

References

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RESULTS

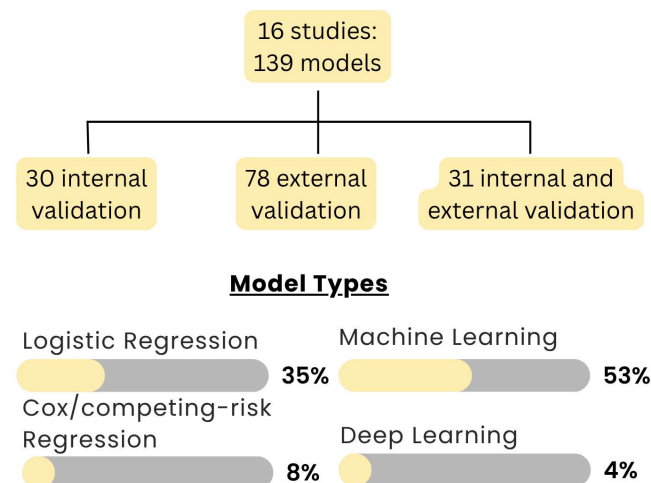
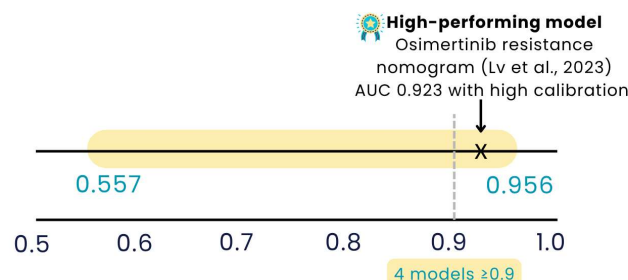


Figure 1. Characteristics of included MRI-based prediction models

24 clinical-radiomic models consistently outperformed radiomics-only models

Discrimination across 109 externally validated models:



AUC, area under the ROC curve; C-index, concordance index.
Higher values indicate better discrimination.

Figure 2. Discriminative performance of externally validated models

Calibration was reported in only 2 models; both showed good agreement between predicted and observed outcomes.

No studies included prospective validation or data/code sharing