

P1.157: Deciphering Tumor Size in Lung Adenocarcinoma : A Nonlinear Phenotype-Dependent Framework for Risk Stratification

Hyojin Kim¹, Jeonghyo Lee², Sungjin Kim², Heesoo Yoon¹, Yeon Bi Han¹, Hyun Jung Kwon¹, Sukki Cho³, Kwhanmien Kim³, Jin-Haeng Chung¹
¹Seoul National University Bundang Hospital, Seongnam/KR, ²Seoul National University College of Medicine, Seoul/KR, ³Seoul National University Bundang Hospital, Thoracic and Cardiovascular Surgery, /KR
Correspondence: chungjh@snu.ac.kr

INTRODUCTION

Hypothesis Tumor size determines T classification in lung adenocarcinoma and is interpreted as a surrogate for aggressiveness, yet its biologic meaning may differ by radiologic phenotype.

Aim To determine whether the size at which adverse pathologic features emerge, and the recurrence risk associated with tumor size, differ between mGGO and solid lung adenocarcinoma.

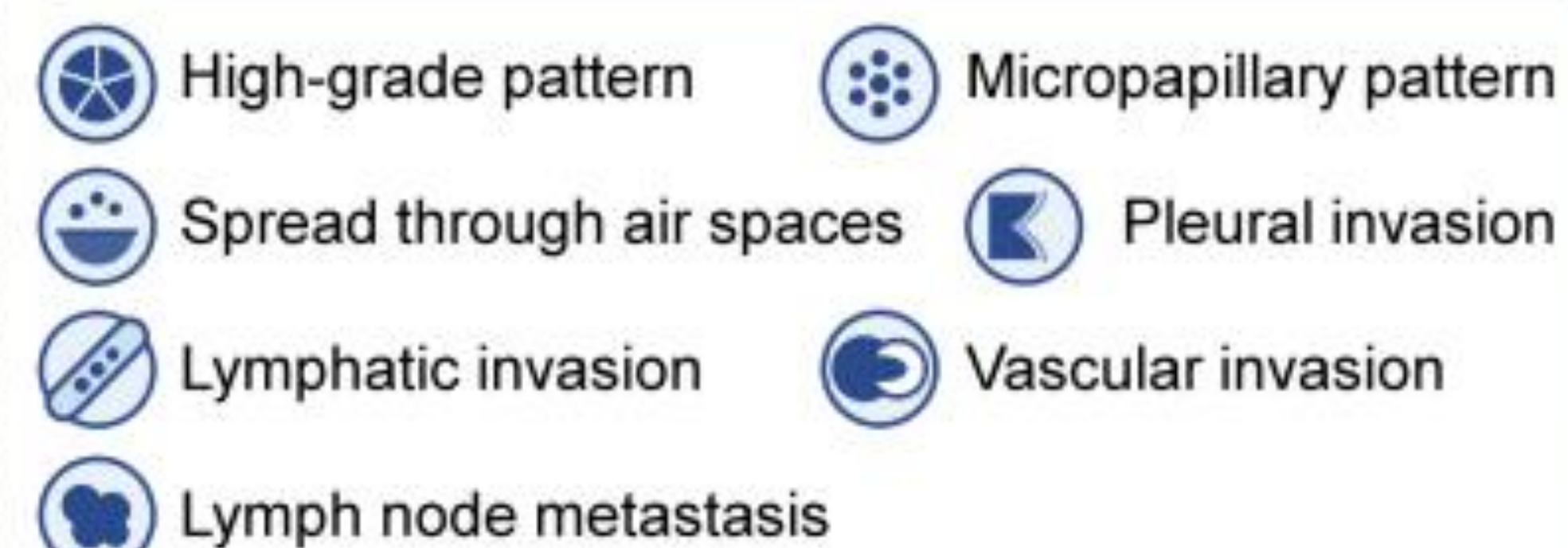
METHODS

Study Population & Assessments

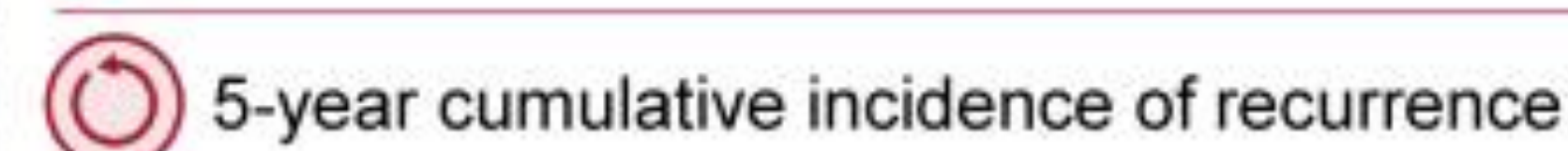


**Size-Feature & Size-Recurrence relationships:
mGGO vs. solid tumors in 3,857 resected LUAD**

Adverse pathologic features



Clinical outcomes



DISCUSSION AND CONCLUSION

Actionable Take Away Message

- Radiologic phenotype determined the trajectory along which invasive and dissemination-associated features emerged: high-grade patterns and spread through air spaces marked the onset of adverse biology, and the lymphovascular and nodal events that followed carried the recurrence risk.

Future Direction for Research

- A phenotype-informed reading of size may support more precise risk stratification and surgical decision-making

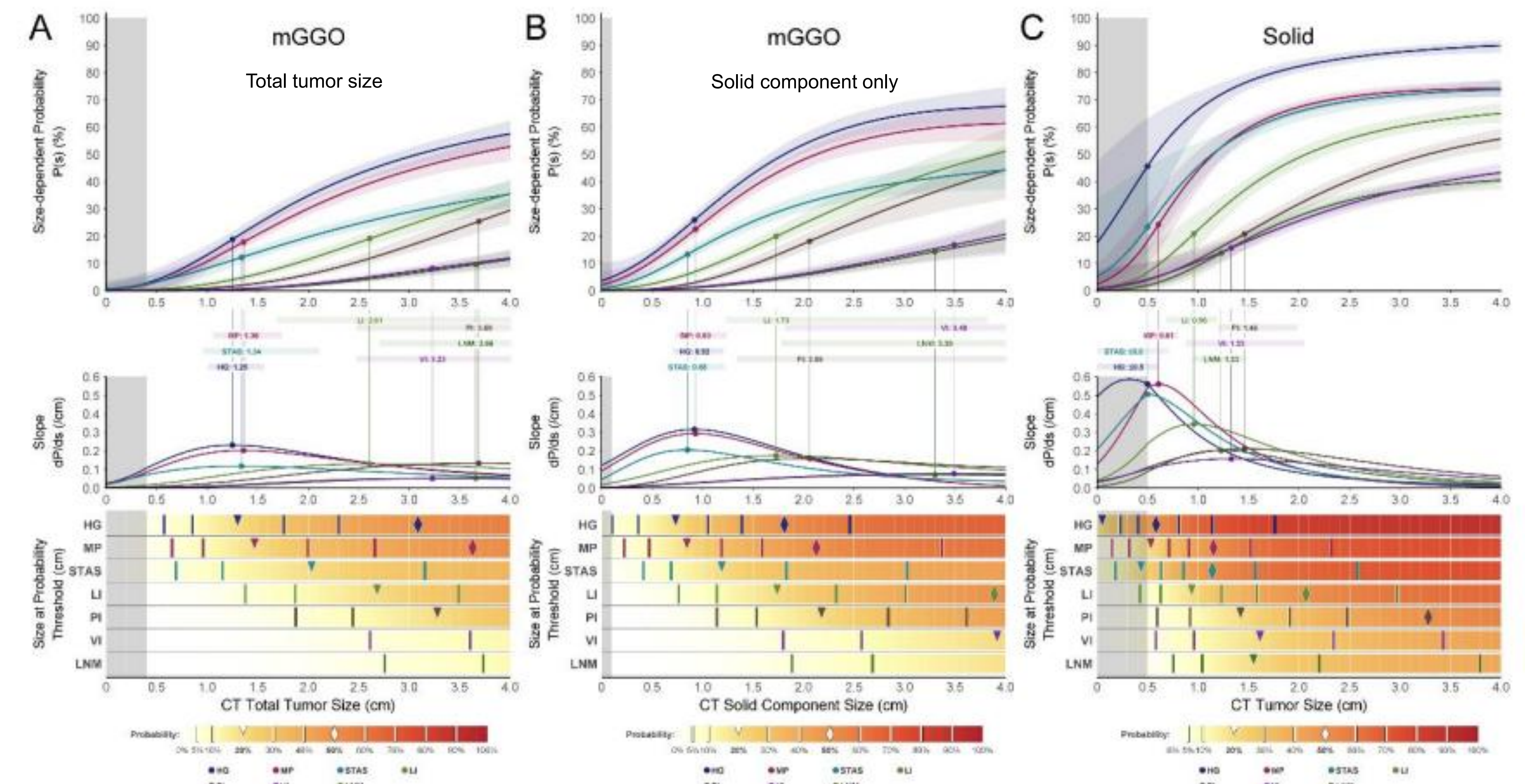
REFERENCES

- Rami-Porta R, Bolejack V, Crowley J, et al. The IASLC lung cancer staging project: proposals for the revisions of the T descriptors in the forthcoming eighth edition of the TNM classification for lung cancer. J Thorac Oncol 2015;10(7):990–1003.
- Travis WD, Asamura H, Bankier AA, et al. The IASLC lung cancer staging project: proposals for coding T categories for subsolid nodules and assessment of tumor size in part-solid tumors in the forthcoming eighth edition of the TNM classification of lung cancer. J Thorac Oncol 2016;11(8):1204–1223.
- Ye T, Deng L, Wang S, et al. Lung adenocarcinomas manifesting as radiological part-solid nodules define a special clinical subtype. J Thorac Oncol 2019;14(4):617–627.
- Altorki NK, Wang X, Kozono D, et al. Lobar or sublobar resection for peripheral stage IA non–smallcell lung cancer. N Engl J Med 2023;388(6):489–498..

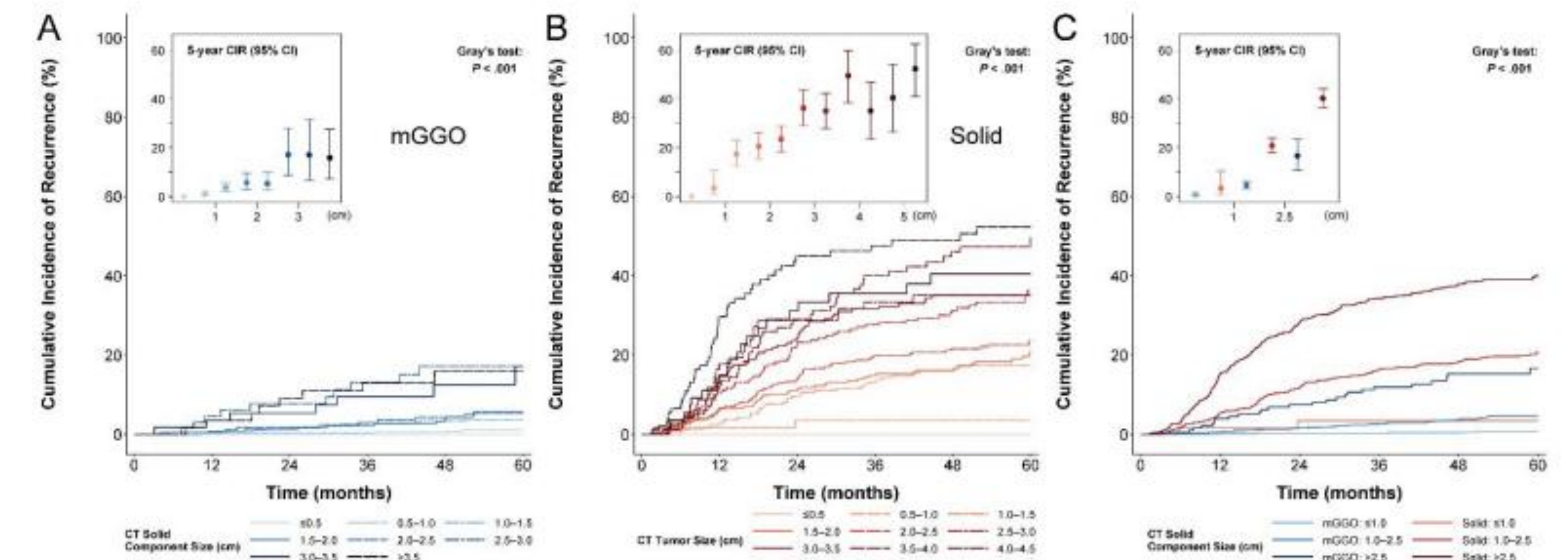
Artificial Intelligence (AI) Use Disclaimer

No AI or AI-assisted tools were used in any part of this work.

RESULTS



Graphs show the modeled probability of adverse pathologic features as a function of tumor size, estimated with shape-constrained additive models using monotone increasing P-splines, according to radiologic phenotype. Inflection points, the sizes at which prevalence increased most rapidly, occurred at 1.25–1.36 cm in A, at 0.85–0.93 cm in B, and at or below 0.5 cm for high-grade (HG) pattern and spread through air spaces (STAS) in C.



Graphs show the cumulative incidence of recurrence according to combined stratification by tumor size (thresholds of 1.0 and 2.5 cm) and by the presence or absence of any adverse pathologic feature, in (A) mixed ground-glass opacity (mGGO) and (B) radiologically solid lung adenocarcinomas. mGGO tumors are stratified by solid component size and solid tumors by total tumor size. Feature-absent tumors showed minimal recurrence in both phenotypes regardless of size..