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PEER-REVIEW REPORT

Name of journal: *World Journal of Gastrointestinal Oncology*

Manuscript NO: 112873

Title: Machine learning survival prediction in esophageal cancer using radiomics and body composition from pretreatment and follow-up T12-level computed tomography

Provenance and peer review: Invited manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 06359626
Position: Peer Reviewer
Academic degree and professional title: Assistant Professor, PhD
Reviewer's Country/Territory: India
Author's Country/Territory: Taiwan

Manuscript submission date: 2025-08-08
Reviewer chosen by: Jia-Lin Zhang
Reviewer accepted review: 2025-09-04 06:42
Reviewer performed review: 2025-09-08 05:23
Review time: 3 Days and 22 Hours

Content to be reviewed	Does the manuscript's content fall within the scope of the journal? **Yes** Is there any Key Word that is not included in the manuscript title? **No** Do authors' affiliations correspond to the content of the manuscript? **No** Does the Abstract contain the contents of each part of the manuscript (IMRaD)? **Yes** Are the Key Words complete? **Yes**

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	Is the content of the Materials and Methods complete? **Yes** Is the content of the Introduction adequate? **Yes** Is the description of the experiments clear and complete? **Yes** Are the experimental data presented in the manuscript's biostatistics content reliable? **Not Applicable** Are the experimental data of the Results true and reliable? **Yes** Are the quality and resolution of the images up to standard? **Yes** Do the selection and design of the figures and tables follow the principles of necessity and clarity? **Yes** Is there any duplication between various parts of the manuscript and between the main text and the content presented in the figures and tables? **No** Are the figures and tables numbered consecutively in the order in which they appear in the manuscript? **Yes** Is the content of the Discussion reasonable? **Yes** Is the Conclusion reasonable? **Yes** Are all references necessary and reasonable? **Yes** Do authors omit important references? **No** Are all references related to the topic of the manuscript? **Yes** Do authors only cite their own earlier publications? **No** Is the manuscript's text correct, concise, and clear? **Yes** Will the manuscript's content be of interest to readers? **Yes** Are additional experiments needed for the study? **No**

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	Does the research scope comply with ethics? **Yes**
Scientific quality	Grade C (Good)
Novelty of this manuscript	Grade C (Good)
Creativity or innovation of this manuscript	Grade C (Good)
Scientific significance of the conclusion in this manuscript	Grade C (Good)
Language quality	Grade B (Very good)
Does this manuscript describe a study of the existing knowledge system?	Yes
Does this manuscript report a revolutionary innovation?	No
Does this manuscript report an unconventional innovation?	No
Conclusion	Major revision
Re-review	Yes
Peer-reviewer statements	Peer-Review: Anonymous
	Conflicts-of-Interest: No
Are your review comments generated by AI tools?	No

SPECIFIC COMMENTS TO AUTHORS

The manuscript presents an innovative approach to predicting survival in esophageal cancer patients using radiomics and body composition analysis (BOA) at the T12 vertebral level from both pretreatment and follow-up CT scans. The study addresses an important clinical problem—limited access to L3-level imaging in follow-up scans—by proposing T12-level analysis as a practical alternative. The integration of radiomic, clinical, and BOA features into machine learning (ML) models, with logistic regression

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achieving strong performance (AUC = 0.91), is a notable contribution. The paper is well-structured, supported by adequate literature, and offers clinically meaningful insights.

Major Concerns

Lack of Validation: The study does not perform internal cross-validation or external multicenter validation. This limits generalizability and may overestimate model performance.

Suggestion: Apply k-fold cross-validation and, if possible, validate with an independent cohort.

Sample Imbalance: Gender and histological subtypes are highly skewed (94% male, 97% squamous cell carcinoma). Findings may not apply to females or adenocarcinoma patients.

Suggestion: Discuss in more depth how this imbalance may affect model performance and explore subgroup analyses.

Reproducibility of Radiomics: CT images were acquired from different scanners and protocols, but harmonization techniques (e.g., ComBat) were not applied. Radiomic features are sensitive to such variations.

Suggestion: Add harmonization or at least discuss potential bias introduced by scanner variability.

Follow-up CT Timing: The follow-up CT window (60–180 days) is wide, introducing variability. The optimal timing for prognostic CT should be investigated.

Suggestion: Perform stratified analysis by narrower intervals.

Clinical Interpretation of Features: Many selected radiomic features (e.g., VAT_glrlm_RunEntropy1) lack clinical interpretability. While statistically valid, their biological meaning should be discussed to strengthen translational value.

Minor Concerns

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1. Figures (nomograms, KM curves, AUC plots) could be better labeled with higher resolution for clarity.

2. Some inconsistencies in terminology (e.g., "clinicl_M" typo in tables). Proofreading is needed.

3. The abstract mentions "sensitivity 0.81, specificity 0.88," but does not specify which time point this corresponds to—clarify.

4. Reference list is strong, but a few more comparative studies on deep learning in esophageal cancer prognosis (2022–2025) could be cited.

5. Consider shortening the discussion slightly—some sections repeat earlier points.

Recommendation

Major Revision: The study is scientifically sound and clinically relevant but requires additional validation, improved discussion of bias/limitations, and stronger focus on clinical interpretability before acceptance in a high-impact journal.