

PEER-REVIEW REPORT

Name of journal: *World Journal of Gastroenterology*

Manuscript NO: 73262

Title: Radiomics for the detection of microvascular invasion in hepatocellular carcinoma

Provenance and peer review: Invited manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 00028182

Position: Peer Reviewer

Academic degree: MD

Professional title: Associate Professor, Doctor

Reviewer's Country/Territory: Italy

Author's Country/Territory: China

Manuscript submission date: 2021-11-16

Reviewer chosen by: AI Technique

Reviewer accepted review: 2021-11-16 12:40

Reviewer performed review: 2021-11-20 15:16

Review time: 4 Days and 2 Hours

Scientific quality	<input checked="" type="checkbox"/> Grade A: Excellent <input type="checkbox"/> Grade B: Very good <input type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
Language quality	<input checked="" type="checkbox"/> Grade A: Priority publishing <input type="checkbox"/> Grade B: Minor language polishing <input type="checkbox"/> Grade C: A great deal of language polishing <input type="checkbox"/> Grade D: Rejection
Conclusion	<input type="checkbox"/> Accept (High priority) <input type="checkbox"/> Accept (General priority) <input checked="" type="checkbox"/> Minor revision <input type="checkbox"/> Major revision <input type="checkbox"/> Rejection
Re-review	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Peer-reviewer	Peer-Review: <input checked="" type="checkbox"/> Anonymous <input type="checkbox"/> Onymous

SPECIFIC COMMENTS TO AUTHORS

As previously reported, microvascular invasion (MVI) is closely related to recurrence in postoperative HCC and is a major topic in the HCC treatment setting. MVI is assessed primarily through pathological and immunohistochemical analysis of postoperative tissue samples being needle biopsy the only method to accurately confirm the diagnosis before surgery but it is limited by suboptimal sensitivity since biopsy may cause false negatives. In this interesting review, the authors addressed radiomics as non-invasive tool to preoperative predict HCC-MVI status by delineating the tumor and or a certain distance from the surface of tumor to extracting features. They discuss the application of radiomics based on various imaging modalities in preoperative evaluation of HCC-MVI and explores the future research directions for facilitate the clinical translation of radiomics. The review is of interest and of current clinical relevance. However, in my opinion some important literature data are lacking and should be discussed to improve the clinical significance. -MRI-BASED RADIOMICS: the authors stated that "MRI provides many additional imaging sequences that are helpful in the diagnosis of HCC " and that "and enhanced scan by combined use of some extracellular and hepatocyte contrast agents, such as gadoxetic-acid that has the ability to distinguish relatively small and subtle lesions through low signal in the hepatobiliary stage (HBP)". In this regard, it would be useful to recall that a combination of MR parameters can be useful for the early diagnosis of small hepatocellular carcinoma (HCC). For example, it has previously reported that double hypointensity in the portal/venous and hepatobiliary phases can be considered a MRI pattern, highly suggestive of hypovascular hepatocellular carcinoma (which is very difficult to diagnose by imaging) as previously reported (Impact of gadoxetic acid (Gd-EOB-DTPA)-enhanced magnetic resonance on the

non-invasive diagnosis of small hepatocellular carcinoma: a prospective study. *Aliment Pharmacol Ther.* 2013;37(3):355-63). - Another topic worth mentioning is the difficult imaging characterization of recurrent HCC nodules due to the potential different imaging features of recurrent nodules. It is well known that in cirrhosis primary and recurrent nodules (10-30 mm nodules after a previously treated hepatocellular carcinoma) may display variations in enhancement pattern, as previously reported (Characterization of primary and recurrent nodules in liver cirrhosis using contrast-enhanced ultrasound: Which vascular criteria should be adopted? *Ultraschall in der Medizin* 2013;34:280-287). The authors should discuss that, in this setting, radiomics may be useful to better characterize recurrent nodules. - A last point I would suggest to discuss is the potential role in the differential diagnosis of liver nodules in patients with chronic liver diseases (thank to additional imaging parameters), for example in distinguish some difficult-to-characterize focal liver lesion such as macronodular hepatic tuberculosis which can be misdiagnosed as HCC according to only LI-RADS criteria as recently reported (Contrast-enhanced ultrasound LI-RADS LR-5 in hepatic tuberculosis: Case report and literature review of imaging features; *Gastroenterology Insights* 2021; Volume 12, Issue 117; Yang C, Liu X, Ling W, Song B, Liu F. Primary isolated hepatic tuberculosis mimicking small hepatocellular carcinoma. *Medicine* 2020;99e22580).

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Professional title: Doctor

Reviewer's Country/Territory: China

Author's Country/Territory: China

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Scientific quality	<input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Very good <input type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
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Re-review	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Peer-reviewer	Peer-Review: <input checked="" type="checkbox"/> Anonymous <input type="checkbox"/> Onymous

statements

Conflicts-of-Interest: [] Yes [Y] No

SPECIFIC COMMENTS TO AUTHORS

The authors presented a review focusing on the topic: 'Radiomics for the detection of microvascular invasion in hepatocellular carcinoma'. MVI is a significant prognostic factor, carrying with potential clinical relevance. And a mount of evidence showed that radiomics is predictive of MVI status. Before publication, I suggest the author should still address some issues. 1.Title:Ok 2.Language: the paper needs further polish. Some confusing sentences hinder better understanding of this review. 3.I suggest the authors add several references of conventional imaging features for predicting MVI without using radiomics, such as MRI/CT/US. And please discuss the potential benefit of radiomics in comparison with conventional imaging modalities. 4. Also it would be helpful for authors to list a table encompassing significant literatures regarding radiomics for MVI prediction in each section. The table would be more concise and informative for readers to understand.