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ESPS PEER-REVIEW REPORT

Name of journal: World Journal of Radiology
ESPS manuscript NO: 23139
Title: Does computed tomography permeability predict hemorrhagic transformation after ischemic stroke?
Reviewer's code: 03461597
Reviewer's country: United States
Science editor: Shui Qiu
Date sent for review: 2015-10-27 17:24
Date reviewed: 2015-12-13 02:47

CLASSIFICATION	LANGUAGE EVALUATION	SCIENTIFIC MISCONDUCT	CONCLUSION
[ ] Grade A: Excellent	[Y] Grade A: Priority publishing	Google Search:	[ ] Accept
[Y] Grade B: Very good	[ ] Grade B: Minor language polishing	[ ] The same title	[Y] High priority for publication
[ ] Grade C: Good	[ ] Grade C: A great deal of language polishing	[ ] Duplicate publication	[ ] Rejection
[ ] Grade D: Fair	[ ] Grade D: Rejected	[ ] Plagiarism	[ ] Minor revision
[ ] Grade E: Poor		[Y] No	[ ] Major revision
		BPG Search:	
		[ ] The same title	
		[ ] Duplicate publication	
		[ ] Plagiarism	
		[Y] No	

COMMENTS TO AUTHORS

This article investigated the role of permeability score (PS) on CTP to predict HT in AIS patients. They concluded that pretreatment PS can predict the occurrence of HT on follow-up CT with reasonable accuracy. Overall it is a nicely written study, I recommend publication with minor revision: 1. Can the author provide some details on how PS is calculated with a reference? Is PS permeability surface area product? 2. Of 84 total patients, 42 patients were followed by CT and 32 by MRI, why not include the 32 patients with follow up MRI which can detect HT? This can increase sample size and reduce selection bias. 3. The rationale for including 6 TIA patients is not clear, and one with cerebellar symptoms. The pathophysiology of TIA is variable and different from AIS. The authors used basal ganglia as ROI for TIA, this needs justification. 4. Can the authors provide some details on how to determine the location and size of ROIs. On Fig. 1, the lesion ROI and contralateral ROI are not symmetric relative to the midline. 5. For comparison of ratio (rPS), t-test is not appropriate, either need (log) convert the ratio to normal distribution or use non-parametric statistics

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ESPS PEER-REVIEW REPORT

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CLASSIFICATION	LANGUAGE EVALUATION	SCIENTIFIC MISCONDUCT	CONCLUSION
[ ] Grade A: Excellent	[ ] Grade A: Priority publishing	Google Search:	[ ] Accept
[ ] Grade B: Very good	[Y] Grade B: Minor language polishing	[ ] The same title	[ ] High priority for publication
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		[ ] The same title	
		[ ] Duplicate publication	
		[ ] Plagiarism	
		[Y] No	

COMMENTS TO AUTHORS

In this study, the authors sought to use perfusion–derived permeability–surface area product maps to predict hemorrhagic transformation following thrombolytic treatment for acute ischemic stroke. The authors retrospectively analyzed their prospective database for patients with acute ischemic stroke (AIS) who had CT perfusion (CTP) done at arrival and follow-up CT. The permeability score (PS) was calculated for the side of the ischemia and/or infarction and for the contralateral unaffected side at the same level. The relative permeability score (rPS) was calculated as the ratio of the PS on the side of the AIS to the PS on the contralateral side. A paired t-test was performed on the rPS between patients with and without hemorrhagic transformation. For the group of patients who experienced intracranial bleed, a paired t-test was performed between those with only petechial hemorrhage and those with more severe parenchymal hematoma with subarachnoid hemorrhage. Of 84 patients with AIS and CTP at admission, only 42 patients had a follow-up CT. The rPS derived using the normal side as the internal control was significantly higher ($p = 0.002$) for the 15 cases of hemorrhagic transformation (1.71+ 1.64) compared to 27 cases that did not have any (1.07 + 1.30). Of

the 15 cases of hemorrhagic transformation, there was no difference (p = 0.35) in the rPS between the eight cases of petechial and the seven cases of more severe hemorrhagic events. This is a reasonable study that is somewhat confirmatory. Prior studies have demonstrated that the extracted permeability surface area product (PS) shown to be an independent predictor of future hemorrhagic transformation (1,2). There are a few flaws/limitations to the present study. The authors note that (CTP) is increasingly used in cases of suspected AIS to evaluate the tissue at risk. Since recent randomized clinical trials have not shown an independent predictive value for CTP in multivariate analysis in AIS patients, this modality is not used to as great a degree. At the authors' institution, are they still obtaining CTP on all AIS patients? It would appear not, as only half of the patients during this time period had CTP. What were the differences between patients that did and did not receive CTP? One of the largest drawbacks is the small number of patients and the omission of a multivariate model. There are many factors that predict petechial and parenchymal hematoma following treatment of AIS. Large studies have been conducted to determine factors predictive of post-treatment hemorrhage that allow for multivariate analysis to determine predictive patient, disease, and treatment characteristics. The present study does not include a multivariate analysis to demonstrate that the rPS is an independent predictor of hemorrhage. Due to the small number of patients this might not be robust. It would be nice to have clinical follow up on patients. Is the rPS predictive of functional outcome (modified Rankin scale etc)? References 1. Hom J, Dankbaar JW, Soares BP, et al. Blood-brain barrier permeability assessed by perfusion CT predicts symptomatic hemorrhagic transformation and malignant edema in acute ischemic stroke. Am J Neuroradiol 2011; 32: 41-48. [PMID: 20947643 DOI: 10.3174/ajnr.A2244] 2. Aviv RI, d'Esterre CD, Murphy BD, et al. Hemorrhagic transformation of ischemic stroke: Prediction with CT perfusion. Radiology 2009; 250: 867-77. [PMID: 19244051 DOI: 10.1148/radiol.2503080257]