LETTER TO THE EDITOR

Author Response

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Dear Sir,

We thank the authors[1] for their interest in our article and their in-depth analysis. Here, we attempt to address some of these concerns.

First, Vision, Aphasia, Neglect (VAN) as a tool for emergent large-vessel occlusion (ELVO) detection was applied in our center, which is a private-sector charitable institute that offers subsidized treatment in the south Karnataka region to a large number of patients from all classes. We beleive that as there is a scarcity of Indian data for the validation of VAN tool, it is precisely in such institutions that it be tested out. Our attempt with this study is to spark the need for more research on a much bigger scale, especially in public sector institutes and we hope that our results will help to initiate those conversations. Second, the sensitivity and specificity of the method were calculated against the gold standard of MR angiogram in stroke patients. Calculating the VAN score on a healthy control group would have resulted in a uniformly negative score for all. Also, an MR angiogram would be required by all patients of suspected stroke as per our institute protocol and it would be unethical to withhold that crucial investigation from patients with disease. Vision, Aphasia, Neglect is merely a screening tool for ELVO, especially in resource-limited settings, and must be followed up by NIHSS for assessing stroke severity and imaging for definitive diagnosis. At no point are we suggesting that the VAN score replaces either of those tools for LVO definitive diagnosis.

The study was planned on a small scale due to the ongoing COVID-19 pandemic.

We had similar concerns as the authors of the letter and hence, we did collect information regarding preexisting comorbidities. Also, patients with residual defects from previous strokes or with prior audio–visual disabilities were excluded from the study, as mentioned in the "Selection of Subjects". Detailed information about comorbidities is given in Table 1.

As VAN is proposed to be a quick screening tool for use at the first point of medical contact in suspected stroke patients and more so in the prehospital setting, gross visual field examination is all that is advocated in the tool as per its original authors. Perimetry would be beyond the scope of this type of healthcare setting and be time- and labor-consuming, which negates the purpose of a screening tool.

Table 1: Comorbidities

	No. of patients (%)
Comorbidities (overall)	60 (84.5)
Diabetes	32 (45.1)
Hypertension	41 (57.7)
IHD	13 (18.3)
COPD	4 (5.6)
Old CVA	2 (2.8)

VAN-positive status only requires whether the patient has motor weakness and any of the three components, i.e., Visual defect/Aphasia/Neglect – which could be spatial or visual hemineglect. The presence of either of the three makes the patient VAN-positive.

This rationale is based on the fact that Moore et al.[2] demonstrated that the presence of four components forming a combination of reduced consciousness level, lower limb weakness, dysarthria, and gaze deviation had a sensitivity of 96% and specificity of 39% for LVO when compared with computed tomography angiography (CTA). Beume et al.[3] hypothesized that cortical signs such as gaze deviation, aphasia or agnosia, and/or neglect were more accurate predictors of LVO than motor deficit alone (PPV 60% and NPV 94%).

Previously, patients with minor deficits or a low NIHSS were not considered for angiography as it was thought that they had a low possibility of having significant vascular occlusion. But, the findings of Maas et al.[4] show that many patients with low initial NIHSS scores also had clinically important occlusions on vascular imaging. These patients are of particular clinical interest because if they are found to have an LVO, they probably have a larger salvageable penumbra via endovascular therapy. It is based on these observations that the VAN tool has been developed for screening patients for an ELVO.

Last, we agree with the authors that there was a significant delay in the arrival of patients at our center, which is a fully equipped stroke unit. Most patients presented after referral from multiple other centers. The prehospital scenario in India is still at its budding stages, which makes this delay difficult to track. But the fact the delay exists makes our study all the more necessary so that we can provide effective screening tools for ELVO strokes (which are by far the most disabling if not treated at appropriate centers). This delay is precisely what we attempt to mitigate by testing the utility of the VAN tool.

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We thank you profusely for your insights. We agree that larger studies across public and private sector institutes are required to validate this tool in the Indian population. We hope we can collaborate to carry these out, thereby improving stroke care across the board.

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