

Response to Letter to the Editor

"CT Angiography Source-Images and CT Perfusion: Are They Complementary Tools for Ischemic Stroke Evaluation?"

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We appreciate Morelli et al.'s comment on our recent article¹ and we do agree that the interpretation of computed tomography angiography source images (CTA-SI) may be a valuable tool in the assessment of acute ischaemic stroke.

It has been shown that CTA-SI, compared with non-enhanced CT scans, improve both the detection of early ischaemic changes and the prediction of final infarct extent^{2,3}. Furthermore CTA-SI offer substantial more brain coverage than most common computed tomography perfusion (CTP) protocols.

However, as the authors pointed out, recent papers revealed that infarct core estimation on CTA-SI is highly dependent on the CTA acquisition protocol. Pulli et al. have shown that current CTA protocols, designed to speed imaging acquisition (with a shorter time interval between contrast material injection and brain

scanning), are associated with significant overestimation of infarct size on CTA-SI⁴.

Moreover, when comparing CTP-CBV maps with CTA-SI, CBV appears to be a significantly more sensitive marker for early irreversible ischaemic damage and a more accurate predictor of final infarct volume^{5,6}.

Finally, we feel that, nowadays, the main challenge in the initial evaluation of acute ischaemic stroke patients is not the assessment of the ischaemic core (which can reliably be done by DWI, CTP and CTA-SI) but the accurate delineation of the ischaemic penumbra. In fact, there is currently no fast, easily accessible and reproducible way of differentiating tissue at-risk of infarction from areas of benign oligoemia. Only a correct evaluation of the "real" ischaemic penumbra will enable a proper selection of patients for endovascular treatment.

References

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