Incorporating time to reperfusion into the FASTER model of stroke tissue-at-risk

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In a recent paper, we introduced the tool FASTER (Fully Automated Stroke Tissue Estimation using Random Forests), which aims to give an assessment of the tissue at risk in acute stroke beyond the usual paradigm of predefined thresholds on single maps. The FASTER system assesses the likelihood of tissue damage using decision forest classifers, mapping local statistical features of perfusion and diffusion imaging onto maps of the tissue predicted to be lost even if reperfusion is established, and the tissue predicted to be lost only if there is no reperfusion. These models are trained only on extreme cases, in which reperfusion was total and rapid (TICI 3), or completely absent (TICI 0).

In this work we attempt to go further, predicting the likely tissue loss in the case of TICI grades 1-2b, by interpolating between the two predictions yielded by FASTER, and incorporating the time to revascularistion.

Acknowledgments

References

1. R. McKinley et al., Fully Automated Stroke Tissue Estimation using Random Forest Classifiers (FASTER) Accepted for publication, Journal of Cerebral Blood Flow and Metabolism.