Imaging modalities in acute stroke

André Cunha¹ and Manuel Ribeiro¹

Recently, multiple randomized controlled trials demonstrated a high degree of efficacy for endovascular treatment with stent-retriever in strokes caused by large-vessel occlusions. In these trials, the benefit of endovascular therapy was directly related to baseline imaging markers, such as identification of a large artery occlusion, existence of a small infarct core, documentation of adequate collateral circulation and estimation of a target mismatch.

In this new era of acute stroke therapy, controversy persists about the optimal approach to patient selection based on brain imaging. The reduction of the time from onset of symptoms to reperfusion is crucial for a favourable long-term outcome in stroke patients – “time is brain” – therefore we need an imaging strategy to avoid any important delay.

A CT-based imaging approach is the mainstay of acute stroke imaging. Several studies demonstrated the same quality of MRI when compared to a combination of non–contrast-enhanced CT and CT Angiography, in detecting and quantifying signs of cerebral ischemia due to large artery occlusion. Nevertheless, MRI is more sensitive than CT in detecting small lesions and/or posterior fossa ischaemic lesions.

In our practice, we are focused on minimizing delays to reperfusion, providing fast imaging paradigms with the essential information necessary for decision-making. The combination of the clinical assessment, non–contrast-enhanced CT and CT Angiography, supports the selection of suitable patients for endovascular revascularization. We are moving from a rigid time-based to a physiology-based decision, selecting patients for treatment beyond the 6-hour window if there is evidence of a significant imaging/clinical mismatch.

Imaging has, therefore, a key role in medical and endovascular treatment decisions, overtaking time as the single surrogate marker of brain physiology.

¹Neuroradiology Department, Centro Hospitalar de Vila Nova de Gaia/Espinho, Portugal

Citation: Cunha et al. Imaging modalities in acute stroke. International Journal of Clinical Neurosciences and Mental Health 2016; 3(Suppl. 2):L4

Published: 06 June 2016