Emergent Stroke Imaging: Protocols And Imaging Pearls

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Advanced stroke imaging has generated much excitement for the early diagnosis of acute ischemic stroke (AIS) and facilitation of intervention.
Endovascular treatment of acute ischemic stroke in the anterior circulation due to large-vessel occlusion is now the new standard of care as a result of recently published trials with positive outcomes.
With the recently successful endovascular treatment trials it is time to evaluate the optimal imaging protocol for acute disabling stroke. Vascular imaging with CTA is essential to confirm an intracranial LAO and can also provide collateral flow information without further imaging (single phase CTA). Noncontrast brain CT scans can be used to estimate infarct volume with ASPECTS system as well as to exclude patients with hemorrhagic stroke. Additional imaging such as multiphase CTA or CTP can increase confidence estimating infarct core.
Multiphase CTA has the advantage of simplicity since it only adds about 20 seconds to the single phase CTA protocol. CTP may not be necessary in the first six hours from onset where the efficacy of endovascular treatment is clearly proven.
It may have a crucial role for more careful patient selection required for wake-up strokes and late window. Multimodal MRI is still an option at highly efficient centres as long as door to reperfusion times rival what can be now accomplished with NCCT/multiphase CTA protocols