Comptuted tomography perfusion

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The authors report an interesting review of the literature regarding the utility of CT perfusion in the assessment of acute stroke patients. Specifically, they analyzed sources of variability and error in the acquisition of CT perfusion scans. They identified 23 published original research articles and categorized the 3 stages of a CT perfusion study. They identified 7 sources of potential variability among these 3 CT perfusion stages.

The utility of CT perfusion in the management of acute stroke patients is the subject of considerable current debate. The crux of this debate is whether a subset of patients who are beyond the standard 6-hour time window for the performance of intraarterial thrombolytic techniques can be identified. Computed tomography perfusion offers the allure of delineating a penumbra of at-risk brain in this particular patient population. Without CT perfusion, these patients may be incorrectly labeled as unsalvageable or too risky to treat in an aggressive endovascular fashion. Nonetheless, this current review establishes the potential pitfalls associated with CT perfusion. These 7 sources of variability include the subjective analysis of radiologists in the interpretation of these scans. These interpretations are often made on the basis of qualitative assessments and likely vary from person to person.

The authors conclude that standards need to be established for each of the 3 stages of CT perfusion acquisition. The sheer number of interpretive radiologists and the variability in the equipment and software used to obtain these scans make this task extremely difficult. If and when these techniques can be standardized, the next step would be a quantitative analysis of the efficacy of CT perfusion in identifying patients who could potentially benefit from endovascular therapy. Although these questions are difficult to answer, the potential benefits in the management of this devastating disease are enormous. (DOI: 10.3171/2011.3.FOCUS1184)

Disclosure

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