

Abstract

How Accurate are Pre-Hospital Stroke Scales Used by Emergency Medical Services and What are their Clinical Implications: State-Level Experience from South Carolina, United States

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ABSTRACT

Background: The Cincinnati Pre-hospital Stroke Scale (CPSS) and Los Angeles Prehospital Stroke Scale (LAPSS) are widely used by EMS for screening of potential stroke cases.

Objectives: The objectives of this study were to assess the accuracy of CPSS and LAPSS when used by EMS in the field and evaluate the impact of their utilization on stroke treatment.

Methods: For the years 2010-2013, a state-level database was created linking South Carolina EMS data with hospital discharge records. For each scale, we calculated the sensitivity, specificity, positive and negative predictive value, comparing screening results with discharge diagnoses for stroke. Additionally, we evaluated the impact of early stroke identification by EMS using stroke scale, on treatment with IV-tPA.

Results: For all EMS transported cases where CPSS or LAPSS was used (n=101,442), 6,757 cases had a confirmed stroke diagnosis. CPSS demonstrated sensitivity of 59%, and specificity of 96%. The sensitivity and specificity for LAPSS were 26% and 84%, respectively. Positive and negative predictive values for CPSS were 45% and 98%, and 27% and 83% for LAPSS, respectively. Rates of IV-tPA administration were approximately 5 times higher for those correctly identified using CPSS, and approximately twice higher for cases correctly identified using LAPSS.

Conclusion: Early identification of stroke cases using CPSS or LAPSS can have a significant impact on the rate of treatment of ischemic stroke with IV-tPA. We report a modest accuracy of these two stroke scales in correctly identifying stroke cases in the field, with CPSS leading to a higher rate of IV-tPA use compared with LAPSS.

Keywords: Emergency Medical Services (EMS), Cincinnati Prehospital Stroke Scale (CPSS), Los Angeles Prehospital Stroke Scale (LAPSS), Acute Ischemic Stroke, IV-tPA

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