

Distance neurological supervision using telestroke does not increase door-to-needle time in acute ischemic stroke management: the experience of two regional stroke units

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Timely administration of r-tPA improves clinical outcomes in acute ischemic stroke patients. This study aims to explore the influence of the systematic presence on-site of a neurologist compared to telestroke management on door-to-needle time in acute ischemic stroke outside of working hours.

This retrospective cohort study included all r-tPA treated patients in the emergency rooms of two Swiss stroke units, Nyon hospital (Groupement Hospitalier de l'Ouest Lémanique, GHOL) and Fribourg hospital (Hôpital de Fribourg, HFR), between February 2014 and September 2018. Door-to-needle time was analyzed for patients admitted during working hours (WH, weekdays 08:00 – 18:00) and outside of working hours (OWH, weekdays 18:00 to 08:00, weekends and public holidays). The latter was compared between centers; OWH every patient was evaluated prior to thrombolysis by a neurologist on-site in GHOL, while HFR adopted distance neurological supervision with teleradiology, performed by telephone evaluation of relevant clinical information with online real-time access to brain imaging.

Data was analyzed for 157 patients in HFR and 101 patients in GHOL. No statistically significant differences in baseline characteristics were found for the 258 r-tPA treated acute ischemic stroke patients, in terms of age, gender, cardiovascular risk factors (hypertension, diabetes, atrial fibrillation) and pre-mRs between centers, with the exception of smoking and anticoagulation status. Patients in HFR presented with more severe strokes (median NIHSS (6 (SD 6.88) (GHOL), 8 (SD 6.98) (HFR), $p = 0.005$). No significant differences in baseline characteristics were found as per admission time independently of the center. Door-to-needle time was significantly longer in the HFR cohort when compared to GHOL, irrespective of admission time. Both centers demonstrated significantly longer median door-to-needle time OWH. However, analysis of the door-to-needle time differences between WH and OWH showed no significant interaction using robust ANCOVA WRS2 analysis ($p = 0.952$) and a Bayesian model ($BF_{01} = 3.97$).

On-site systematic evaluation by a neurologist did not appear to influence door-to-needle time OWH, suggesting distance supervision may be time-efficient in thrombolysis. This supports existing prospective studies in hyperacute telestroke management. The relevance lies in optimizing resource-use considering the increasing demand for emergency neurological management.

Jury:

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