

TIME SPENT IN DIAGNOSING ACUTE ISCHEMIC STROKE: A RETROSPECTIVE SINGLE CENTRE STUDY

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Introduction. The “best therapy” for stroke is preventing it in the first place. In the case it has already occurred, timely action and orchestrated work of emergency medical services together with physicians and radiologists at the admissions department is vital. The most effective therapy for eligible patients suffering from acute ischemic stroke is thrombolysis (tPA), and it provides best results when administered in less than three hours from the onset of stroke. Another condition with similar clinical features – brain haemorrhage – has to be excluded using radiologic imaging techniques e.g. computed tomography (CT). Given the narrow available time-frame, every minute spent in setting the correct diagnosis is crucial. The current guidelines for early management of patients with acute ischemic stroke (provided by American Heart Association/ American Stroke Association) recommend an initiation of a CT scan within 25 minutes and start of the tPA therapy within 60 minutes from arrival at the emergency department.

Aim. We set out to investigate time spent in each of steps from admission (*door*) to physical examination by a neurologist (*physician*), to CT-scan, to thrombolytic therapy (*needle*) where applicable. Our main hypothesis states that *door-to-CT*, *door-to-physician*, and *door-to-needle* (where applicable) times are not affected by time of the day (office-hours vs. off-hours) or weekend (working days vs. weekends). This thesis will also give an overview of median values of above mentioned measures, enabling a comparison to similar studies from abroad.

Results. After excluding incomplete case histories, data set contained information about 53 patients treated with tPA and 450 treated conservatively. The median *door-to-physician* time was 8 minutes for tPA group and 12 minutes for others, median *door-to-CT* time 45 and 70 minutes accordingly. Median *door-to-needle* time was 100 minutes. *Door-to-CT* and *door-to-physician* time across all patients are both affected by weekends (*Mann-Whitney*, $p < 0.01$), but are not affected by office hours ($p > 0.3$). *Door-to-needle* time in patients treated with tPA was not affected by weekends or office hours ($p > 0.1$). Whilst *door-to-physician* time for the tPA group was within the

advised time-frame in the majority of cases (68%), it appears that *door-to-CT* and *door-to-needle* times exceeded the recommended time-frames in all of the reviewed cases.

Conclusions. We must reject our hypothesis and conclude that weekends affect the in-hospital delay. In comparison to available literature, median *door-to-CT* and *door-to-needle* time was rather long and it is therefore advised to seek measures of improving it, e.g. by employing *stroke pathways* or pre-hospital alarming systems that have been shown to reduce intra-hospital delays.