

Mechanical thrombectomy and the ‘weekend effect’: does admission time influence outcomes?

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Introduction

In acute ischaemic stroke, ‘time is brain’, with 1.9 million neurones lost for every minute of untreated ischaemia, leading to death or disability.¹ Recanalisation through mechanical thrombectomy has been shown to greatly improve outcomes in patients with large vessel occlusion.² In the UK, few centres offer a 24/7 or out-of-hours thrombectomy service; however, many centres are planning on increasing their operating hours. For many conditions, there is strong evidence that treatment outside normal working hours results in poorer outcomes.³ This ‘weekend effect’ impacts the outcomes for many conditions, including stroke;³ however conflicting evidence exists for its impact on mechanical thrombectomy patients.^{4,5} In this study we report the effect of admission timing on mechanical thrombectomy outcomes at a 24/7 comprehensive stroke centre.

Methods

Patients were identified through a prospectively entered database of all mechanical thrombectomies performed at the Royal Stoke University Hospital. Data extracted included: age, National Institutes of Health Stroke Scale (NIHSS) scores, risk factors, pathway timings, complications and modified Rankin Scale (mRS) scores at 3 months. All thrombectomies performed between May 2009 and June 2019 were identified, of which 493 had complete data available and were therefore included in the study. In-hours admissions were defined as between 08:00–17:00 on Monday to Friday, any patients presenting outside this time window were classed as an out-of-hours admission. Statistical analysis was performed using Mann–Whitney *U* test and chi-squared test where appropriate.

Results

There were 210 in-hour thrombectomies and 283 out-of-hour thrombectomies performed in the time period analysed. Demographics of the two groups differed significantly with regards to age (in-hours median 71, interquartile range (IQR) 61–77; out-of-hours median 68, IQR 57–76; $p=0.01$) and presence of hypertension (in-hours 47% vs out-of-hours 56%; $p=0.03$). Door-

to-groin times were significantly longer in the out-of-hours group (134 minutes vs 110 minutes; $p=0.02$). There were no significant differences in short-term outcomes, including symptomatic intracranial haemorrhage (sICH) identified (in hours 6% vs out of hours 8%; $p=0.25$). Finally, there were no significant differences in long-term outcomes including rate of functional independence at 90 days (in hours 51% vs 47%; $p=0.94$) and death at 90 days (in hours 17% vs out of hours 20%; $p=0.28$).

Conclusion

Patients presenting out of hours represented a different stroke population to those presenting in hours. Key pathway measures such as door to groin puncture were significantly longer in the out-of-hours period. However, these differences did not translate into any difference in short- or long-term outcomes. In conclusion we have demonstrated two key points. Firstly, that it is possible to provide a 24/7 mechanical thrombectomy service in the UK safely and effectively, and secondly, that there is no discernible ‘weekend effect’ in terms of short- and long-term outcomes post-mechanical thrombectomy. ■

Conflicts of interest

None declared.

References

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