

Editorial comment on ‘Impact on functional outcome of an adaptive Stroke Unit based system of care for patients undergoing endovascular treatment during pandemic times’ by Equiza J et al. published European Stroke Journal

European Stroke Journal
2022, Vol. 7(3) 257–258
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DOI: 10.1177/23969873221100661
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Christian H Nolte 

Treatment for acute ischaemic stroke has become increasingly more complex and challenging since endovascular thrombectomy has been shown effective for appropriately selected patients with stroke due to large vessel occlusion.¹ Endovascular thrombectomy needs more, and in particular more specialised, technical and human resources. Moreover, these resources need to be coordinated by sophisticated standard operating procedures. Timely performance can be often challenging.² The COVID-19 pandemic put extra strain on this complex, demanding task. Some reports indicate impairment of treatment metrics and even of patients' outcome during the COVID-19 pandemic.^{3,4}

Moreover, many aspects of optimal stroke organisation are still a matter of debate. Following endovascular thrombectomy, many centres admit their stroke patients to an intensive care unit (ICU) to facilitate post-procedural extubation because the patients had undergone general anaesthesia (GA) for the endovascular procedure. GA may enable better pain control as well as movement and airway protection of the patient and in turn facilitate the thrombectomy manoeuvre. Post-procedural admission to the stroke unit (SU) constitutes an alternative and may allow skipping ICU admission. As ventilation is not available on the vast majority of SUs, this sequence would be facilitated by conscious sedation (CS) instead of GA during the endovascular thrombectomy. The effects of these procedural steps (GA vs CS) and post-thrombectomy admission (ICU vs SU) are discussed controversially.^{5,6}

In this issue of the European Stroke Journal Equiza et al. report the findings of their single-centre, observational, retrospective before-and-after study on reorganising the standard operating procedure for patients undergoing endovascular treatment for large vessel occlusion ischaemic stroke.⁷

Due to extra demand of ICU beds during the COVID-19 pandemic, the team decided to adjust the traditional stroke workflow with GA and post-procedural ICU admission

and implement an adaptive workflow preferring CS and direct SU admission instead. To evaluate the effect of this adaptation, the authors compared stroke treatment metrics, technical outcomes, prevalence of complications and functional outcome in a before-and-after design. The authors present detailed data of 107 patients treated before and 103 patients treated after the adaptation. Following the adaptation, the proportion of patients undergoing CS (instead of GA) significantly increased from 17/107 (16%) to 59/103 (57%) and the proportion of patients primarily admitted to SU (instead of ICU) increased from 16/107 (15%) to 68/103 (66%).

Moreover, puncture to recanalisation time significantly decreased from 50 to 41.5 min, median number of passes went down from two to one and proportion of final TICI score 3 significantly increased from 48% to 70%. Frequency of complications (e.g. symptomatic haemorrhage, infections) did not differ between the two time periods. Finally and most importantly, a significantly higher proportion of patients attained a favourable clinical outcome (mRS \leq 2 at 90 days) after the implementation of the new pathway. The improvement in the proportion of patients achieving favourable clinical outcome corresponds to 24.7% absolute (35.5% vs 60.2%). This effect size is similar to a number-needed-to-treat of 4.

Klinik für Neurologie mit Experimenteller Neurologie and Center for Stroke Research Berlin (CSB) and Berlin Institute of Health (BIH), Charité-Universitätsmedizin Berlin, corporate member of Freie Universität Berlin and Humboldt-Universität zu Berlin, Berlin, Germany

Corresponding author:

Christian H Nolte, Klinik für Neurologie mit Experimenteller Neurologie and Center for Stroke Research Berlin (CSB) and Berlin Institute of Health (BIH), Charité-Universitätsmedizin Berlin, corporate member of Freie Universität Berlin and Humboldt-Universität zu Berlin, Department of Neurology, Charite, Campus Benjamin Franklin, Hindenburgdamm 20, Berlin 12203, Germany.
Email: Christian.nolte@charite.de

This achievement is very impressive, as randomised controlled trials (RCTs) have not been able to show superiority of CS over GA so far.⁵ Findings of these RCTs contrast with some observational data though.⁶ Admission to a dedicated stroke unit is indeed associated with better outcome. However, Comparisons have been considering normal wards rather than ICUs.⁸

Therefore, the underlying explanation for the impressive improvement reported by Equiza et al. is not obvious. Most of the captured demographic and clinical data do not differ significantly pre- and post-adaptation and do not suggest a strong deviation in patient allocation. A training effect may have played a rôle – but the interventionalists were already well trained pre-adaptation.

The authors have to be congratulated to their enormous achievement, even if this improvement may not be easily transferred to other settings.

Declaration of conflicting interests

The author declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: Dr. Nolte received speaker and/or consultation fees from Abbott, Alexion, Bayer Pharma, Boehringer Ingelheim, Bristol-Myers Squibb, Daiichi Sankyo, and Pfizer Pharma out of relevance with respect to this editorial.

Funding

The author disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Dr Nolte received research grants from German Ministry of Research and Education, German Center for Neurodegenerative Diseases, German Center for cardiovascular Research

Informed consent

The editorial would not need informed consent.

Ethical approval

The editorial would not need ethical approval.


Guarantor

Christian Nolte guarantees integrity of the editorial

Contributorship

The editorial was invited by editor Professor Kennedy Lees and written by Professor Christian Nolte

ORCID iD

Christian H Nolte  <https://orcid.org/0000-0001-5577-1775>

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