

Endovascular thrombectomy in acute ischemic stroke: a major breakthrough and a big challenge for Brazil

Trombectomia endovascular no acidente vascular cerebral isquêmico agudo: um grande avanço e um grande desafio para o Brasil

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The high prevalence and high rates of death and disability caused by ischemic stroke (IS) call for the urgent need for more effective and accessible therapeutic alternatives to the population at risk.

Undoubtedly the last 20 years were the scene for huge advances in the pathophysiological understanding of acute ischemic stroke (AIS) as well as for the emergence of effective treatments with a high level of scientific evidence, including intravenous thrombolytic (IVT) therapy and stroke units^{1,2}.

In addition to these therapy strategies the world's neurological community has been highly impacted in recent months with a significant number of randomized controlled trials (RCT) showing greater efficacy of mechanical thrombectomy associated with IVT treatment compared to IVT therapy alone. The impact of these RCT culminated with the publication of consensus and new guidelines for AIS treatment at the international level^{3,4}.

In this edition of *Arquivos de Neuro-Psiquiatria* Ferri CP et al. present an interesting and current systematic review of the literature on mechanical thrombectomy in AIS, summarizing the main features and results of published RCT⁵. Some of these features are worth considering since they were probably the key to the results.

Over the last 10 years there has been major technological breakthrough for the mechanical thrombectomy devices, starting with MERCI[®] retriever and reaching stent retriever devices (e.g. SOLITAIRE[®] and TREVO[®]), making them more effective in removing even the largest thrombi. In addition, most modern devices have a more flexible profile, allowing easier navigation and faster access to vascular occlusion site. Indeed, comparative studies between these two generations of devices reveal the stent retrievers' superiority, both in effectiveness and in safety^{6,7}. It should be noted that most of the latest randomized studies used stent retrievers unlike the earlier ones in which MERCI Retriever was mainly used.

Another striking aspect is an appropriated selection of patients with indication for mechanical thrombectomy. It is evident that the most recent studies, which were highly favorable to endovascular treatment, were more judicious and selected only patients with proven proximal occlusion of large cerebral arteries (mainly anterior circulation). This selection criterion was not observed in earlier studies such as IMS III (stopped for futility)⁸. However, it is interesting to point out that a sub-analysis of the same study suggested the efficacy of combined intravenous and endovascular treatment in patients with proximal large artery occlusion⁹.

Third, it must be remembered that, as well as in IVT therapy, a comparison among mechanical thrombectomy RCTs shows strong correlation between duration of the symptoms, from onset to effective recanalization, and clinical outcome with better prognosis where reperfusion occurs more rapidly. In three of the five published studies the median time duration between onset of symptoms and reperfusion was approximately 4 hours. This finding reinforces the importance of agility in the endovascular treatment in order to reproduce the observed results.

Finally, authors point out to potential implications for clinical practice that deserve consideration. Despite the great efforts currently undertaken, access of the population to treatment

with high level of evidence for AIS is still very small. There are many reasons for that, including geographic, cultural, economic and political issues.

Combined IVT and mechanical thrombectomy treatment, now considered the “gold standard” for AIS therapy, requires a major restructuring as in the public as in private sphere. Its utilization demands specialized hospital infrastructure, technology and human (interventional neuroradiology), which increases costs. In a same way, as it has occurred in other countries, it is essential to organize new regional AIS networks and to expand the existing ones.

Even before that, an appropriated selection of patients and their quick referencing for qualified centers, promoting

greater effectiveness of these advanced therapeutic resources, require the participation of an experienced vascular neurologist. The lack of enough neurologists in a large country like ours, of continental proportions, makes seeing all acute stroke patients in a presentational way almost impossible, a limitation that could be alleviated by the use of telemedicine in stroke care networks. However, this demands greater public and private investment also.

Therefore, it is essential that neurological community and its representative organizations all-over the country join their strength and voice promoting actions in the field of public and private health, aiming at improving the quality of acute stroke care and population access at these resources.

References

1. Wardlaw JM, Murray V, Berge E, Zoppo GJ. Thrombolysis for Acute Ischemic Stroke, Update August 2014. *Stroke*. 2014;45(11):e222-5. doi:10.1161/STROKEAHA.114.007024
2. Govan L, Weir CJ, Langhorne P, et al. Organized Inpatient (Stroke Unit) Care for Stroke. *Stroke*. 2008;39(8):2402-3. doi:10.1161/STROKEAHA.108.515510
3. ESO-Karolinska Stroke Update 2014. Consensus statement on mechanical thrombectomy in acute ischemic stroke. In: ESO-Karolinska Stroke Update Conference; 2014 Nov 16-18th [access: 2015 Nov 14]; Stockholm. Available from: <http://2014.strokeupdate.org/consensus-statement-mechanical-thrombectomy-acute-ischemic-stroke>
4. Powers WJ, Derdeyn CP, Biller J, Coffey CS, Hoh BL, Jauch EC et al. Focused Update of the 2013 Guidelines for the early management of patients with acute ischemic stroke regarding endovascular treatment. *Stroke*. 2015;46(10):3020-35. doi:10.1161/STR.0000000000000074
5. Ferri CP, Buehler A, Flato UAP, Puglia Junior P, Fernandes JG. Endovascular thrombectomy for the treatment of acute ischaemic stroke. *Arq Neuropsiquiatr*. 2016;74(1):67-74. doi:10.1590/0004-282X20150182
6. Nogueira RG, Lutsep HL, Gupta R, Jovin TG, Albers GW, Walker GW et al. Trevo versus Merci retrievers for thrombectomy revascularization of large vessel occlusions in acute ischaemic stroke (TREVO 2): a randomized trial. *Lancet*. 2012;380(9849):1231-40.
7. Saver JL, Jahan R, Levy EI, Jovin TG, Baster B, Nogueira RG et al. Solitaire flow restoration device versus the Merci Retriever in patients with acute ischaemic stroke (SWIFT): a randomised, parallel-group, non-inferiority trial. *Lancet*. 2012;380(9849):1241-9. doi:10.1016/S0140-6736(12)61384-1
8. Broderick JP, Palesch YY, Demchuk AM, Yeatts SD, Khatri P, Hill MD et al. Endovascular therapy after intravenous t-PA versus t-PA alone for stroke. *N Engl J Med*. 2013;368(10):893-903. doi:10.1056/NEJMoa1214300
9. Demchuk AM, Goyal M, Yeatts SD, Carrozzella J, Foster LD, Qazi E et al. Recanalization and clinical outcome of occlusion sites at baseline CT angiography in the Interventional Management of Stroke III trial. *Radiology* 2014;273(1):202-10. doi:10.1148/radiol.1413264