

## Acute ischaemic stroke in atrial fibrillation: worse outcomes unrelated to treatment methods



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In this issue of EuroIntervention, Heshmatollah et al from the MR CLEAN (Multicenter Randomized CLinical trial of Endovascular treatment for Acute ischemic stroke in the Netherlands) Study Group present secondary analysis<sup>1</sup> from their landmark randomised trial<sup>2</sup>.

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I was surprised at how the authors set out their aims, “The aim of the present study is to determine if atrial fibrillation (AF) modifies the effect of endovascular treatment”. I do not agree with the way in which the aims were formulated and I will try to explain why.

The observations that patients with acute ongoing cerebral ischaemia caused by cardioembolic occlusions tend to have worse outcomes after any (not only endovascular!) treatment than patients with ischaemic stroke of other aetiologies are known<sup>3</sup>. However, this cannot be interpreted as meaning that atrial fibrillation itself modifies the effect of endovascular treatment. Such a statement could lead to dangerous conclusions, e.g., to scepticism, leading to denying endovascular treatment to patients with atrial fibrillation.

The fact that outcomes of patients with atrial fibrillation and acute ischaemic stroke are inferior to patients with stroke without AF can be explained simply by the fact that AF presence is a marker of more serious cardiovascular disease<sup>4</sup>. The large (mean 12 years!!) age difference may simply explain the results of this

study – obviously older patients (with AF) have inferior outcomes when compared to a substantially younger group (without AF). Furthermore, patients with AF in this study had longer time delays. We may expect that cerebral ischaemia caused by a sudden embolus from the heart (coming to an “unprepared brain”) can progress faster than ischaemia caused by, e.g., progressive carotid stenosis (where there may be time for development of collaterals). This is well known from coronary artery disease: patients suffering ST-elevation myocardial infarction (STEMI) as the first symptom of their disease have a larger infarct size compared to patients with STEMI after some period of angina pectoris. Thus, AF-related cerebral ischaemia may be progressing faster, but in the MR CLEAN study it was treated later compared to patients without AF. It is thus not surprising that outcomes are inferior compared to stroke without AF.

Our experience supports these comments: our patients with AF are older, more obese, more frequently have renal failure and less frequently have visible collaterals (**Table 1**).

Furthermore, it is known that thrombolysis is less used in patients with AF-related stroke and, if used, has only limited effect. Thus, it is dangerous to present sceptical comments about the effect of mechanical thrombectomy in AF, when in fact such treatment might be the best chance for these patients. The most important question for future research might be whether the time

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**Table 1. Acute ischaemic stroke treated with mechanical thrombectomy: baseline differences between groups with atrial fibrillation versus without atrial fibrillation at the Cardiocenter, Kralovske Vinohrady, Prague.**

	AF +	AF –
N	51	101
Mean age, years	73.0	64.2
Mean BMI	33.8	28.4
Chronic renal failure	26%	17%
Time from symptom onset to angio suite	155 min	167 min
NIHSS at presentation	17.2	15.4
Other than single anterior occlusion (i.e., posterior stroke or carotid T-occlusion or tandem carotid lesion or multiple emboli)	52%	43%
Angiographically visible collaterals at presentation	47%	57%
NIHSS: National Institutes of Health Stroke Scale		

window for indication of thrombectomy might be shorter in AF patients than in patients without AF. Of course, this apparently logical presumption would require a dedicated study.

### Conflict of interest statement

The author has no conflicts of interest to declare.

### References

1. Heshmatollah A, Fransen PS, Berkhemer OA, Beumer D, van der Lugt A, Majoie CB, Oostenbrugge RJ, van Zwam WH,

Koudstaal PJ, Roos YB, Dippel DW; on behalf of the MR CLEAN investigators. Endovascular thrombectomy in patients with acute ischaemic stroke and atrial fibrillation: a MR CLEAN subgroup analysis. *EuroIntervention*. 2017;13:996-1002.

2. Berkhemer OA, Fransen PS, Beumer D, van den Berg LA, Lingsma HF, Yoo AJ, Schonewille WJ, Vos JA, Nederkoorn PJ, Wermer MJ, van Walderveen MA, Staals J, Hofmeijer J, van Oostayen JA, Lycklama a Nijeholt GJ, Boiten J, Brouwer PA, Emmer BJ, de Bruijn SF, van Dijk LC, Kappelle LJ, Lo RH, van Dijk EJ, de Vries J, de Kort PL, van Rooij WJ, van den Berg JS, van Hasselt BA, Aerden LA, Dallinga RJ, Visser MC, Bot JC, Vroomen PC, Eshghi O, Schreuder TH, Heijboer RJ, Keizer K, Tielbeek AV, den Hertog HM, Gerrits DG, van den Berg-Vos RM, Karas GB, Steyerberg EW, Flach HZ, Marquering HA, Sprengers ME, Jenniskens SF, Beenen LF, van den Berg R, Koudstaal PJ, van Zwam WH, Roos YB, van der Lugt A, van Oostenbrugge RJ, Majoie CB, Dippel DW; MR CLEAN Investigators. A randomized trial of intraarterial treatment for acute ischemic stroke. *N Engl J Med*. 2015;372:11-20.

3. Gattellari M, Goumas C, Aitken R, Worthington JM. Outcomes for patients with ischaemic stroke and atrial fibrillation: the PRISM study (A Program of Research Informing Stroke Management). *Cerebrovasc Dis*. 2011;32:370-82.

4. Ozeke O, Cay S, Ozcan F, Hacili A, Topaloglu S, Aras D. Bear tracks hypothesis: from atrial fibrillation to atrial fibrosis syndrome in stroke risk assessment. *Expert Rev Cardiovasc Ther*. 2017;15:559-61.