**Supplementary Material**

**Meta-analysis of cerebral hemodynamic parameters to predict outcome following intravenous rtPA for acute ischemic stroke**

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**Supplementary table.**

Summary of each hemodynamic assessment and its primary conclusions.

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| **Article** | **Method** | **Number of patients** | **AAN****Score** | **Main conclusion** |
| Linfante et al (2002) (1)  | MR or CT angiography and TCD | 36 | IV | MCA occlusions are associated with lower NIHSS scores and higher proportion of recanalization when compared with ICA occlusions. |
| Röther et al (2002) (2) | MR angiography | 139 | III | rtPA therapy is associated with better vessel recanalization and functional outcome.  |
| Nighoghossian et al (2003) (3) | MR angiography | 29 | II | Recanalization (day one) is correlated with clinical outcome after rtPA for ischemic stroke. |
| Derex et al (2004) (4) | MR angiography | 49 | II | The site of occlusion in pre-treatment MRA is associated with recanalization rate and clinical outcome. |
| Alsop et al (2005) (5) | MR angiography and TCD | 20 | IV | Extremely low or completely absent contrast arrival may indicate tissue-at-risk for hemorrhage before rtPA treatment. |
| Pialat et al (2005) (6) | MR angiography | 42 | IV | Recanalization is highly correlated with time from stroke onset to the thrombolytic treatment and seems to decrease the growth potential of the lesion. |
| Albers et al (2006) (7) | MR angiography | 74 | II | Early recanalization is associated with a higher reduction in PWI volume and better clinical outcome in mismatch patients. |
| Olivot et al (2008) (8) | MR angiography | 74 | III | Early recanalization is associated with reduced infarct growth and better clinical outcomes in mismatch patients, but not in the absence of mismatch |
| Olivot et al (2009) (9) | MR angiography | 32 | III | Early recanalization is associated with higher 30-day diffusion reversal rates |
| Kimura et al (2009) (10)  | MR angiography | 64 | I | rtPA treatment is related to higher early recanalization rate in patients with major artery occlusion (MCA higher than ICA). |
| Baizabal-Carvallo (2012) (11) | MR angiography and TCD | 33 | III | Complete recanalization was independently associated with smaller infarct growth |
| Sims et al (2005) (12) | CT angiography | 47 | III | Patients without major artery occlusion before treatment have lower NIHSS, better chances of early improvement, fewer hemorrhages and early independence. |
| Sillanpaa et al (2012) (13) | CT angiography | 83 | II | Combination of angiogram with perfusion best predicts clinical outcome |
| Christou et al (2000) (14) | TCD | 40 | II | The timing of arterial recanalization after rtPA therapy as determined with TCD correlates with clinical recovery from stroke and demonstrates a 300-minute window to achieve early complete recovery. |
| Burgin et al (2000) (15) | TCD | 25 | II | Complete MCA recanalization on TCD accurately predicts angiographic findings. |
| Alexandrov et al (2000) (16) | TCD | 40 | II | Dramatic recovery during rtPA therapy was associated with recanalization on TCD, whereas no early improvement indicated persistent occlusion or re-occlusion. |
| Molina et al (2001) (17) | TCD | 72 | III | Early recanalization is a powerful independent predictor of functional independence at 3 months. |
| Alexandrov et al (2001) (18) | TCD | 65 | III | Rapid arterial recanalization is associated with better short-term improvement. |
| Alexandrov et al (2002) (19) | TCD | 60 | III | Early re-occlusion is responsible for neurologic deteriorations. However, patients with re-occlusion have better long-term outcomes than patients without any early recanalization. |
| Christou et al (2002) (20) | TCD and MR angiography or DSA | 20 | III | ICA occlusion is more resistant to recanalization after intravenous rtPA therapy. However, recanalization of associated proximal MCA clot or improved MCA collateral flow is strongly associated with good outcome. |
| Molina et al (2002) (21) | TCD | 32 | II | Thrombolysis-related HI (HI1-HI2) represents a marker of early successful recanalization, which leads to a reduced infarct size and improved clinical outcome. |
| Felberg et al (2002) (22) | TCD | 53 | II | TCD monitoring suggests that dramatic recovery is a result of early restoration of MCA flow during the rtPA infusion. |
| El-Mitwalli et al (2002) (23) | TCD | 95 | III | The number of collateral flow channels and Thrombolysis in Brain Ischemia (TIBI) flow grade is associated with NIHSS scores before thrombolysis. |
| Labiche et al (2003) (24) | TCD | 86 | IV | Patients with no detectable residual flow signals at TCD before thrombolysis, have less chance of complete early recanalization with intravenous rtPA. |
| Molina et al (2004) (25) | TCD | 72 | III | The pattern of rtPA-induced MCA recanalization differs among stroke subtypes. |
| Molina et al (2004) (26) | TCD | 177 | III | The combination of clinical, radiological, and hemodynamic information predicts with a high accuracy long-term stroke outcome during or shortly after intravenous rtPA administration. |
| Thomassen et al (2005) (27) | TCD | 41 | III | Recanalization within 24 h is associated with favorable outcome mostly within the first 5 h after stroke |
| Kim et al (2005) (28) | TCD | 104 | III | Tandem lesion has lower early recanalization rate and early neurological improvement than isolated MCA occlusion. |
| Rubiera et al (2005) (29) | TCD | 142 | III | Stroke severity and ipsilateral severe carotid artery disease independently predict re-occlusion after rtPA-induced MCA recanalization. |
| Rubiera et al (2006) (30) | TCD | 221 | I | Tandem occlusion of ICA/MCA independently predicts poor outcome after IV thrombolysis. |
| Ribo et al (2006) (31) | TCD | 179 | III | The majority of rtPA-induced recanalization occurs during the first hour after treatment. Late recanalization can still be associated with clinical improvement if achieved within 6 hours from onset. |
| Saqqur et al (2007) (32) | TCD | 374 | II | Early re-occlusion is predictive of clinical deterioration and long-term poor outcome. |
| Saqqur et al (2007\_b) (33) | TCD | 335 | IV | Site of occlusion is associated with clinical response to thrombolysis. Terminal ICA occlusion is least likely to respond to treatment. |
| Tsivgoulis et al (2007) (34) | TCD | 351 | II | Higher pretreatment SBP levels are associated with poor recanalization in patients treated with intravenous rtPA. |
| Delgado-Mederos et al (2007) (35) | TCD and MRI | 113 | II | Time of recanalization predicts DWI lesion evolution and clinical outcome with slow recanalization being associated with greater DWI lesion growth and poorer short and long term outcomes |
| Saqqur et al (2008) (36) | TCD | 349 | II | Persistent arterial occlusion after intravenous rtPA treatment can be an independent predictor of SICH. |
| Delgado-Mederos et al (2008) (37) | TCD and MRI | 80 | II | Blood pressure variability in non-reanalyzed patients is associated with greater diffusion-weighted imaging lesion growth and worse clinical course. |
| Saqqur et al (2009) (38) | TCD | 361 | II | Pre-treatment TIBI flow grade predicts likelihood of complete recanalization, time of recanalization and long term outcome. |
| Uzuner ert al (2013) (39) | TCD | 90 | IV | Pulsatility index may be associated with clinical outcome after thrombolytic therapy |

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