EXTEND-IA - Endovascular Therapy After Intravenous t-PA Versus t-PA Alone For Ischemic Stroke Using CT Perfusion Imaging Selection

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Background

Trials of endovascular therapy versus IV tPA for ischemic stroke have had mixed results. We conducted the EXTEND-IA investigator-initiated trial to test whether more advanced imaging selection, superior devices and earlier intervention improve outcomes.

Methods

Ischemic stroke patients receiving 0.9mg/kg tPA <4.5h after onset with dual target of arterial (internal carotid or middle cerebral) occlusion and salvageable tissue on CT perfusion (ischemic core <70ml), were randomized to either tPA + clot retrieval <6h with the Solitaire FR device (IV-IA group), or tPA only. The pre-specified co-primary outcomes were i) the proportion of the perfusion lesion reperfused at 24h on CT or MR perfusion imaging, and ii) the proportion of patients with early neurological improvement, defined as >=8 point reduction in NIHSS, or reaching 0-1, by day 3. Secondary outcome was ordinal analysis of mRS at 90 days. The trial was stopped early 4 Nov 14 (70 of the planned 100 patient sample) by the data safety and monitoring committee for overwhelming efficacy on the co-primary outcome (Haybittle-Peto stopping boundary with Bonferroni-Holm step-down p<0.0005 for first and p<0.001 for second co-primary outcome, intention to treat analysis) in a review prompted by the release of positive MR-CLEAN trial results.
**Results**

There were 35 patients in the IV-IA group (mean age 68.6, sd 12.3, median NIHSS 17, IQR 13-20, median onset-recanalization 259min) and 35 who received tPA alone (mean age 70.2, sd 11.8, median NIHSS 13, IQR 9-19). The IV-IA group had greater median %reperfusion (100% vs 42% p<0.00001, adjusted for site of arterial occlusion) at 24h (>90% reperfusion in 89% vs 37%, p<0.0001) and early neurological improvement (80% vs 37% p=0.001, adjusted for age, baseline NIHSS, site of arterial occlusion) at 3 days than the tPA group. Symptomatic intracerebral hemorrhage (SITS) occurred in 0/35 IV-IA and 2/35 (5.7%) tPA patients. Complications in the IV-IA group were 1 wire perforation and 1 groin hematoma. Day 90 mRS will be presented.

**Conclusions**

Early endovascular thrombectomy with Solitaire FR after tPA resulted in greater reperfusion and early neurologic recovery than tPA alone in a population with major arterial occlusion and salvageable tissue on CT perfusion imaging.

**Disclosure**

**B.C.V. Campbell**: Research Grant; Significant; National Health and Medical Research Council of Australia.  
**P.J. Mitchell**: None.  
**T.J. Kleinig**: None.  
**H.M. Dewey**: None.  
**L. Churilov**: None.  
**N. Yassi**: None.  
**B. Yan**: None.  
**R.J. Dowling**: None.  
**M.W. Parsons**: None.  
**T.J. Oxley**: None.  
**T.Y. Wu**: None.  
**M. Brooks**: None.  
**M.A. Simpson**: None.  
**F. Miteff**: None.  
**C.R. Levi**: None.  
**M. Krause**: None.  
**T.J. Harrington**: None.  
**K.C. Faulder**: None.  
**B.S. Steinfort**: None.  
**M. Priglinger**: None.  
**T. Ang**: None.  
**R. Scroop**: None.  
**P. Barber**: None.  
**B. McGuinness**: None.  
**T. Wijeratne**: None.  
**T.G. Phan**: None.  
**W. Chong**: None.  
**C.F. Bladin**: None.  
**M. Badve**: None.  
**H. Rice**: None.  
**L. de Villiers**: None.  
**H. Ma**: None.  
**G.A. Donnan**: None.  
**S.M. Davis**: None.