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ARTICLE OF THE MONTH

Efficacy and Safety of Very Early Mobilisation Within 24 Hours of Stroke Onset (AVERT): A Randomised Controlled Trial

AVERT Trial Collaboration Group, Bernhardt J, Langhorne P, Lindley RI, Thrift AG, Ellery F, Collier J, Churilov L, Moodie M, Dewey H, Donnan G.
Lancet. 2015 Jul 4;386(9988):46-55. doi: 10.1016/S0140-6736(15)60690-0. Epub 2015 Apr 16.
Erratum in: Lancet. 2015 Jul 4;386(9988):30.
PMID: 25892679

The February 2016 SNACC Article of the Month is one which deals with a seemingly "common sense" intervention post-stroke which may not be as harmless as we might think. The article comes from the *Lancet* as a single-blinded, randomized controlled trial in which patients were enrolled into "early" (within 24 hours) versus "late" (usual care) mobilization after ischemic or hemorrhagic strokes. The primary outcome was three month functionality as defined by the modified Rankin score. What this large study (2104 subjects) showed was that early mobilization may not be associated with better outcomes, and may actually be associated with worse outcomes. To expound on this finding, and the details of the study, we have invited Dr. Abhijit Lele to provide his expert commentary on the matter. Dr. Lele is Associate Professor of Anesthesiology and Director of Neurocritical Care at Harborview Medical Center in Seattle, Washington. Please enjoy this installment of the SNACC Article of the Month, and let your thoughts be shared on the ***SNACC LinkedIn feed*** the ***Twitter feed***, or the ***Facebook page***.

~John F. Bebawy, MD

Commentary

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Stroke is the fifth leading cause of death in the United States and is a major cause of adult disability. While progressive upright mobility after stroke and other acute neurological disorders is recommended in existing guidelines and is widely practiced in neurocritical care and acute care units, there is poor evidence to support this practice.

While it is thought that bed rest may negatively affect musculoskeletal, cardiovascular, respiratory and immune systems, it is largely unclear how early immobilization (defined as within 24 hours of stroke onset) affects neurological outcomes. Benefits of early mobilization (reductions in hospital-acquired infections and in length of stay) must be weighed versus the potential complications such as increasing fall risk, and worsening of intracerebral hemorrhages.

The AVERT study group conducted a large, multicentric, parallel-group, single-blind, randomized controlled trial on a cohort of adult patients with acute stroke (ischemic and hemorrhagic stroke (ICH), wherein intervention in form of frequent out-of-bed activity within 24 hours of stroke onset was compared to standard care in which mobilization was performed after 24 hours and with less frequent out-of-bed activity. Patients requiring ICU admission, surgical intervention, on palliative course, as well as those patients unable to respond to voice, those with systolic blood pressures lower than 110 mmHg or higher than 220 mmHg, and those with heart rates lower than 40 or greater than 110 beats per minute were excluded.

Outcomes such as immobility related complications, accelerated walking recovery, and functional outcome (mRS) were assessed at three and twelve months.

Using intention-to-treat analysis, contrary to popular belief, both the study groups were found to be similar with respect to favorable outcomes (unadjusted analysis), ordinal difference in mRS, and in walking 50 meters unassisted. Death, non-fatal serious adverse events (*falls, angina, myocardial infarctions, depression*), immobility related adverse outcomes (*deep-vein thrombosis, pulmonary emboli, pressure sores, chest infections, urinary tract infection)* and neurological serious adverse events (*stroke progression and recurrent strokes*) were also similar in two study groups.

The study results largely contradict our conventional thinking and practice of early mobilization after stroke. However, the long trial enrollment period of eight years may have resulted in a change in practice due to awareness and implementation of earlier mobilization plans producing a reduction in median time to mobilization of 28 minutes per study year. It is also important to know that 92% of the study group and 59% of the control group received very early mobilization, with a mere four hours difference in time to very early mobilization between the two groups.

While patients with ICH seem to do poorly with early mobilization, this study was underpowered to assess differences between specific stroke subtypes, and warrants larger randomized clinical trial in patients with ICH.
In light of these trial limitations, caution must be exercised prior to making any change in clinical practice.