

Efficacy and safety of venous angioplasty of the extracranial veins for multiple sclerosis. Brave dreams study (brain venous drainage exploited against multiple sclerosis): study protocol for a randomized controlled trial.

Zamboni P1, Bertolotto A, Boldrini P, Cenni P, D'Alessandro R, D'Amico R, Del Sette M, Galeotti R, Galimberti S, Liberati A, Massacesi L, Papini D, Salvi F, Simi S, Stella A, Tesio L, Valsecchi MG, Filippini G; Chair of the Steering Committee.

Abstract

BACKGROUND:

Multiple sclerosis (MS) is a chronic inflammatory demyelinating disease of the central nervous system with a disabling progressive course. Chronic cerebrospinal venous insufficiency (CCSVI) has recently been described as a vascular condition characterized by restricted venous outflow from the brain, mainly due to blockages of the internal jugular and azygos veins. Despite a wide variability among studies, it has been found to be associated with MS. Data from a few small case series suggest possible improvement of the clinical course and quality of life by performing percutaneous balloon angioplasty (PTA) of the stenotic veins.

STUDY DESIGN AND METHODS:

This is a multicenter, randomized, parallel group, blinded, sham-controlled trial to assess the efficacy and safety of PTA. Participants with relapsing remitting MS or secondary progressive MS and a sonographic diagnosis of CCSVI will be enrolled after providing their informed consent. Each participant will be centrally randomized to receive catheter venography and PTA or catheter venography and sham PTA. Two primary end points with respect to efficacy at 12 months are (1) a combined end point obtained through the integration of five functional indicators, walking, balance, manual dexterity, bladder control, and visual acuity, objectively measured by instruments; and (2) number of new brain lesions measured by T2-weighted MRI sequences. Secondary end points include annual relapse rate, change in Expanded Disability Status Scale score, proportion of patients with zero, one or two, or more than two relapses; fatigue; anxiety and depression; general cognitive state; memory/attention/calculus; impact of bladder incontinence; and adverse events. Six hundred seventy-nine patients will be recruited. The follow-up is scheduled at 12 months. Patients, treating neurologists, trained outcome assessors, and the statistician in charge of data analysis will be masked to the assigned treatment.

DISCUSSION:

The study will provide an answer regarding the efficacy of PTA on patients' functional disability in balance, motor, sensory, visual and bladder function, cognitive status, and emotional status, which are meaningful clinical outcomes, beyond investigating the effects on inflammation. In fact, an important part of patients' expectations, sustained and amplified by anecdotal data, has to do precisely with these functional aspects.

TRIAL REGISTRATION:

Clinicaltrials.gov NCT01371760.