**Vascular Intervention for Multiple Sclerosis**

**Clinical Question:** In patients with multiple sclerosis (MS), is angioplasty of obstructed extra-cranial venous lesions safe and does it improve MS symptoms?

**Evidence:**

Cohort study of 65 MS patients with chronic cerebrospinal venous insufficiency (CCSVI) who all underwent angioplasty of obstructed azygous or internal jugular venous lesions:

- Mean age 41, 46% male, minimal to moderate disability (not in wheelchair), on MS disease-modifying agents.
- Vascular outcomes: no serious operative or immediate post-operative complications
  - Re-stenosis at 1-year ~50% for internal jugular.
- Neurological outcomes at 18 months, compared to baseline (No control/placebo group):
  - No benefit seen in Primary or Secondary Progressive MS subtypes.
  - Statistically significant improvements in Relapsing-Remitting MS subtype
    - Fewer patients relapsing over 1-year (50% versus 73%, p=0.0014),
    - Fewer patients with MRI lesions (12% versus 50%, p<0.0001),
    - MSFC (multiple sclerosis functional composite) and quality of life scores improved.
- All Relapsing-Remitting patients with patency post-procedure were relapse free
- Concerns: single study site, not randomized, no control group, and unblinded.
  - Remission is a hallmark of Relapsing-Remitting MS: untreated patients can have reductions (even prolonged) in clinical symptoms\(^2\)\(^3\) and/or MRI lesions\(^4\).
  - A control group and long-term follow-up are essential.

**Context:**

- Preceding study examined extra-cranial doppler ultrasound (ECD) findings in MS and non-MS patients. All of the MS patients and none without MS had CCSVI\(^5\).
- Hypothesis of CCSVI and MS: Chronic insufficient cerebral venous drainage → cerebral iron deposits → engender the immune response underlying MS. Angioplasty improves cerebral blood outflow → decreases cerebral iron deposits → improves MS symptoms\(^6\).
- Many patients are attempting this unproven procedure.
- Subsequent studies question the relationship between CCSVI and MS\(^7\)\(^-\)\(^9\).
Bottom-line: While the initial study may be promising, it is critically flawed for assessing benefit. It is currently premature to recommend endovascular angioplasty to MS patients. Due to the fluctuating nature of relapsing-remitting MS, a long term, multi-centre, blinded randomized control trial is absolutely required to determine if endovascular angioplasty is beneficial.

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