

AAAs. There were 28 deaths (6.1%) following elective repair of 459 incidentally detected AAAs (OR, 0.37; 0.24 to 0.68).

**Comment:** The risk of death in a male patient >65 years operated for an incidentally detected aneurysm is approximately three times more than one operated on for a screened detected AAA. The data do not permit a "drill down" for why patients operated on for screened AAAs have lower operative mortality than those operated on for incidentally detected AAAs. Reasons could include lower ages and decreased comorbidities of screened patients. Also, screened patients may have smaller aneurysms and/or less complex anatomy permitting a higher proportion of endovascular repairs. Overall, however, the author's data provide another bit of evidence to encourage screening in patients at risk for AAA.

#### Proposed Chronic Cerebrospinal Venous Insufficiency Criteria Do Not Predict Multiple Sclerosis Risk or Severity

Centonze D, Floris R, Stefanini M, et al. *Ann Neurol* 2011;70:51-8.

**Conclusion:** Chronic cerebrospinal venous insufficiency (CCSVI) has no role in either multiple sclerosis (MS) risk or MS severity.

**Summary:** Anatomic abnormalities of major neck and chest veins are proposed to impair central nervous system venous drainage. Zamboni has proposed that CCSVI has a strong association with multiple sclerosis (*J Neurol Neurosurg Psychiatry* 2009;80:382-99). His results indicate MS is caused by CCSVI and that CCSVI plays a substantial role in MS progression. Endovascular interventions directed to correct abnormalities of venous drainage reportedly characteristic of CCSVI could potentially improve the clinical course of MS (Zamboni P, et al. *J Vasc Surg* 2009;50:1348-58). However, some question the very existence of CCSVI (Doepff F et al. *Ann Neurol* 2010;68:173-83).

It has been suggested that studies failing to demonstrate a significant association between CCSVI and MS use alternative approaches to define CCSVI than those utilized by Zamboni et al. The authors, therefore, utilized an experimental protocol they feel is identical to that developed by Zamboni and coworkers. This protocol was applied to an independent population of MS patients and healthy controls by operators specifically trained by Dr Zamboni in CCSVI identification.

The Zamboni method for CCSVI identification was studied in 84 MS patients and 56 healthy subjects. There were no significant differences ( $P = .12$ ) in CCSVI frequency between MS and control subjects. No differences were found between CCSVI-positive and CCSVI-negative patients with respect to MS duration, time between MS onset and first relapse, relapsing progressive MS, and risk of secondary progression. There were no statistical differences found between CCSVI-positive and CCSVI-negative MS subjects by analyzing measures of disability such as the mean expanded disability status scale ( $P = .07$ ) mean progressive index ( $P > .1$ ) and mean MS severity score ( $P > .1$ ). The percentage of subjects who reached expanded disability status scale 4.0 and 6.0 was not different among CCSVI-negative and CCSVI-positive patients. There was no difference found between severity of disability and number of positive CCSVI criteria.

**Comment:** This paper disputes the Zamboni theory of CCSVI as the etiology of MS. By using ultrasound operators specifically trained by Zamboni, the authors sought to dissuade the arguments utilized to criticize previous negative studies as being secondary to inappropriate operator training or skills. The results here, put simply, do not support a role of venous abnormalities in MS. It is still premature and, in many respects, perhaps irresponsible to offer endovascular procedures to correct CCSVI in the MS patient population.

#### Symptomatic Internal Carotid Artery Occlusion: A Long-Term Follow-Up Study

Persoon S, Luitse MJA, de Borst G, et al. *J Neurol Neurosurg Psychiatry* 2011;82:521-6.

**Conclusion:** In patients with minor stroke or transient ischemic attack (TIA) and internal carotid artery (ICA) occlusion, recurrent ischemic stroke is infrequent compared to other vascular events and is dependent upon clinical factors and the presence of leptomeningeal collaterals.

**Summary:** In the short- to medium-term, patients with TIA or stroke associated with occlusion of the ICA appear to have a risk of recurrent stroke of approximately 5% per year (Klijn CJM, et al. *Cerebrovas Dis* 2001;12:228-34). The authors previously reported short-term data on prognosis of patients with symptomatic ICA occlusion with respect to hemodynamic compromise of the ICA distribution (Klijn CJM, et al. *Neurology* 2000;55:1806-12). The current study represents long-term data of this original cohort with respect to hemodynamic characteristics of the brain and risk of ischemic stroke.

There were 117 consecutive patients with TIAs or moderately disabling cerebral or retinal ischemia associated with ICA occlusion entered into the study between September 1995 and July 1998 and followed until June 2008. The risk of recurrent ischemic stroke and other vascular events was analyzed. These variables were analyzed with respect to potentially prognos-

tic factors, including collateral pathways and transcranial Doppler CO<sub>2</sub> reactivity.

The mean age of the patients was 61 ± 9 years; 80% were male. Median follow-up was 10.2 years. Twenty-two patients underwent carotid endarterectomy for contralateral ICA stenosis and 16 had extracranial/intracranial bypass surgery. Twenty-three patients had recurrent ischemic stroke computing to an annual rate of 2.4% (95% CI, 1.5 to 3.6). Risk factors for recurrent ischemic stroke were cerebral rather than retinal symptoms (HR, 8.0; 1.0260), recurrent symptoms after ICA occlusion (HR, 4.4; 1.6 to 12), limb-shaking TIAs at presentation (HR, 7.5; 2.6 to 22), age (HR, 1.07; 1.02 to 1.13), history of stroke (HR, 2.8; 1.2 to 6.7), and leptomeningeal collaterals (HR, 5.2; 1.5 to 17). CO<sub>2</sub> reactivity was not a risk factor for recurrent ischemic stroke (HR, 1.01; 0.99 to 1.02). Vascular events in follow-up were frequent and occurred in 57 patients for annual rate of 6.4% (95% CI, 4.9 to 8.2).

**Comment:** The medical arm of the EC/IC bypass trial (EC/IC bypass study group. *NEJM* 1985;313:1191-200) is the largest cohort of medically treated patients with symptomatic ICA occlusion. Follow-up in that study was 4.5 years and the mean annual risk of ischemic stroke was 6.3%. The authors lower observed risk of recurrent ischemic stroke may be related to better medical management than in the 1980s. Also, inclusion of a larger percentage of patients with retinal symptoms may have lowered overall risk. The high rate of other vascular events in patients with ICA occlusion argues for aggressive management of atherosclerotic risk factors in these patients. While leptomeningeal collaterals appear predictive of recurrent ischemic stroke, it is not suggested that with patients ICA occlusion undergo routine angiography. Whether or not EC/IC bypass surgery will prevent stroke in patients with hemodynamic compromise is currently under investigation (GRUBB, RL Jr, et al. *Neurosurg Focus* 2003;14:e9).

#### Trends in Patient Reported Outcomes of Conservative and Surgical Treatment of Primary Chronic Venous Disease Contradict Current Practices

Lurie F, Kistner RL. *Ann Surg* 2011;254:363-7.

**Conclusion:** For patients with primary chronic venous disease, surgical treatment provides better symptom relief compared to conservative therapy. Relief of symptoms after conservative therapy predicts better outcomes following surgical treatment.

**Summary:** Many insurance policies will only approve treatment for varicose veins when medically necessary, with medical necessity defined as failure to obtain symptom relief with conservative management. Conservative management is generally the use of a graduated compression stockings for 1 to 6 months. There is, however, no evidence that conservative therapy obviates further improvement with surgical treatment. The potential of further improvement in symptoms with surgical therapy for patients who have improved with conservative therapy is not known. In assessing the affects of conservative therapy of chronic venous disease, few studies have utilized patient-reported outcomes. Patient-centered medicine, in essence, requires examination of practice guidelines and policies from the patient perspective of treatment outcomes.

The purpose of this study was to analyze patient reported quality of life and symptoms in a cohort of chronic venous disease patients managed within the framework of existing policies. This was a prospective cohort study of 150 patients with C2-C4 primary chronic venous disease. Initial management included conservative measures, following which patients were given a choice of continuing conservative therapy, or moving on to surgical therapy. One and 12 month follow-up visits were scheduled after surgical therapy. Quality of life (QOL) scores and symptom score (SS) were analyzed separately. Conservative treatment provided improvement of symptom scores in 85 (57% of patients) and in QOL scores in 111 (74%) patients. Even though the majority of patients improved, 121 elected surgical treatment after a period of conservative therapy. One month after surgical treatment, 80% of patients (n = 97) had further significant improvement of symptoms and 114 (94%) had further improvement in QOL scores compared to their after conservative therapy period. Improvements in the QOL scores were due mainly to improvements in symptoms. If patients improved after conservative therapy, they were more than 15 times more likely to have symptom relief at 1 month following surgical therapy (relative risk = 15.6; 95%CI, 4.3-56.5) and at 1 year were 21 times more likely to have improved symptom relief following surgery (relative risk = 21.3; 95%CI, 4.7-96.9).

**Comment:** Conservative therapy for patients with primary chronic venous disease improves symptoms and quality of life. The provocative piece of this paper is to suggest improvement with conservative therapy should not be used to withhold surgical therapy, but actually serves as a marker for patients who will improve further with surgical therapy. The findings contradict the present practice of insurance companies interpreting success of conservative measures as a contraindication to surgical treatment. In essence, success of conservative therapy arguably is an indication for surgical therapy.