Letter by Pelz and Lownie Regarding Article, “Intracranial Hemorrhage Is Much More Common After Carotid Stenting Than After Endarterectomy: Evidence From the National Inpatient Sample”

To the Editor:

We read with interest the article by McDonald et al1 and the accompanying editorial from the Carotid Revascularization Endarterectomy Versus Stenting Trial (CREST) investigators regarding the higher incidence of intracranial hemorrhage (ICH) in patients undergoing carotid angioplasty and stenting (CAS) compared with endarterectomy for carotid stenosis. The rate of ICH in symptomatic patients undergoing CAS was 4.4%. The mechanism of postrevascularization ICH is thought to be cerebral hyperperfusion arising from baroreceptor dysregulation of cerebral blood flow. It has been postulated that balloon angioplasty and stenting stretches and “uniquely stuns” the carotid bifurcation baroreceptors. Standard CAS protocols routinely involve both pre- and poststent balloon angioplasty dilatation. Balloon angioplasty is likely the most traumatic part of most CAS procedures.2

Several investigators have described a less invasive approach to CAS, in which the use of balloons and embolic protection devices is minimized or eliminated.3–5 Revascularization relies on the intrinsic chronic outward force of self-expanding stents without the use of balloon angioplasty. The advantages of this technique include decreased complexity, time, and costs of the procedure. This primary carotid stenting approach (PCS) can produce satisfactory imaging and clinical results in a high percentage of patients, and the risk of periprocedural stroke is comparable to published series.6

The incidence of hyperperfusion ICH with PCS has, however, been remarkably low. In our series of 164 CAS procedures, approximately 80% of whom had PCS, there was only 1 ICH and it was of undetermined etiology. In the 2 other published series of 162 PCS cases, there were no reports of ICH. Gradual, slow expansion of the carotid bulb by a self-expanding stent alone is likely to be less traumatic than abrupt balloon expansion, less likely to “stun” carotid baroreceptors, and may also account for the lower incidence of hemodynamic instability seen with PCS compared with standard techniques.6 Although the numbers of patients undergoing PCS are relatively small, this technique may result in a lower incidence of ICH after CAS. A trial of PCS versus standard CAS protocols may be of value. We are currently evaluating the use of carotid plaque morphology on CT angiography to help decide which patients may be most suitable for PCS rather than standard CAS with balloons and embolic protection devices.

Disclosures

None.

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