A new prospective trial reported in the October Journal of Vascular Surgery found that around half of asymptomatic carotid stenosis patients had mild to moderate cognitive impairment.

The report clarifies the role of asymptomatic carotid stenosis independent of cerebral-vascular risk factors in the development of cognitive impairment and suggests hemodynamic impairment as a possible mechanism for this important finding.

It has been well established that carotid stenosis, particularly when high-grade, can result in stroke, transient ischemic attack, blindness and global symptoms. SVS practice guidelines recommend carotid endarterectomy (CEA) for most symptomatic patients with stenosis 50% to 99% and asymptomatic patients with at least a three- to five-year life expectancy and stenosis 60% to 99% (as long as perioperative stroke or death rates are less than or equal to 3%). Carotid artery stenting (CAS) is recommended for symptomatic patients with stenosis 50% to 99%, who are at high risk for CEA for anatomic or medical reasons.

More recent investigations have focused on cognitive impairment, particularly in the aging patient. Vascular risk factors for stroke and cognitive impairment include hypertension, diabetes mellitus, dyslipidemia, cardiovascular disease and tobacco abuse.

What is less well understood is the role of carotid stenosis in cognitive impairment, independent of the above medical risk factors. It has been hypothesized that carotid stenosis may lead to impairment via “silent” microembolic events and/or cerebral hypoperfusion in the absence of adequate collaterals.

Researchers from the University of Maryland and the Baltimore Veterans Affairs Medical Center led by vascular surgeon Dr. Brajesh Lal, performed a prospective, controlled trial to address the role of carotid stenosis in cognitive impairment and offer a potential mechanism for its effect.

They studied 82 patients without any history of cerebral or retinal ischemic symptoms but with >50% carotid stenosis by duplex imaging. The 62 control patients were also asymptomatic, without carotid stenosis, and subsequently matched for vascular co-morbidities.
After administering a battery of neurologic tests and a trans-cranial doppler examination (including 30 second breath hold to determine cerebral vasoreactivity), the researchers found:

• Patients with carotid stenosis had overall decreased cognitive scores including learning, motor, and executive functions compared to controls
• 49.9% of patients with stenosis were considered mild/moderately impaired compared to 22.6% control
• 50% of patients with stenosis had impaired cerebral-vascular hemodynamics, all of whom had cognitive impairment
• No significant differences in microembolic events between the two groups
• No correlation between cognition and plaque burden itself

“This study found evidence that cognitive impairment is an under-recognized morbidity in patients with otherwise ‘asymptomatic’ carotid stenosis,” Dr. Lal said. “It is an important clinical outcome that must be included as a defined end point in future trials testing the efficacy of treatment strategies for carotid stenosis.”

In discussing the finding that the mechanism is likely hemodynamic in origin, he added, “These findings prompt additional studies to evaluate if revascularization can reverse this impairment by improving cerebrovascular hemodynamics.”

Neurological testing as well as hemodynamic evaluation of cerebral perfusion might provide clinicians with additional tools to refine treatment protocols currently based on symptoms and degree of stenosis alone.

This appears to be a big step towards personalized medicine in cerebral vascular disease.

To download the complete article (link available 9/21/2017 through 11/30/2017), click: Vsweb.org/JVS-Cognitive

For information your patients may be interested in -
Regarding carotid artery disease:
https://vascular.org/patient-resources/vascular-conditions/carotid-artery-disease
Regarding carotid endarterectomy:
https://vascular.org/patient-resources/vascular-treatments/carotid-endarterectomy

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