Focus on Research: Consider Microembolization

Veterans Studied for Cognitive Changes

Because of possible long-term negative cognitive effects, microembolization should be considered a surrogate measure for carotid disease management, suggests a prospective longitudinal study.

SVS member Dr. Wei Zhou was lead author and researcher for the study, conducted at the Veteran Administration Palo Alto (California) Health Care System, where she was chief of vascular surgery for 10 years.

Vascular surgeons are well aware of the possibility of cognitive changes following carotid revascularization procedures, and that patients with carotid occlusive diseases are at highest risk for cognitive impairments, said Dr. Zhou, who presented her research at the 2017 Vascular Annual Meeting. She led a similar study in 2012.
The earlier study had indicated impairments receding over time. "We wondered if there were more to the issue. So, we looked at embolic volume and found that … patients with larger volumes of embolic infarct have more of a decline."

Researchers recruited 119 patients – all veterans, a population where occlusive disease is common and who Dr. Zhou had treated for more than a decade – 46 percent of them symptomatic. All underwent carotid revascularization and neuropsychological testing at one, six and 12 months after surgery. They all also received 3T magnetic resonance imaging with a diffusion-weighted imaging sequence postoperatively and within 48 hours of surgery to identify new MRI lesions, a surrogate of procedure-related new embolic lesions. Relationships were identified between infarct volumes and cognitive measures.

The study "for the first time showed that volume of infarction significantly influences long-term cognitive effects in patients who underwent carotid interventions," authors said. It "provides objective evidence that subclinical embolization contributes to heterogeneous cognitive outcomes after carotid interventions, suggesting that the higher percentage of cognitive decline in patients who receive CAS may be due to high volume of procedure-related subclinical embolization."

With a growing aging population and longer life expectancies, such cognitive dysfunction is an important global population health concern, said Dr. Zhou. It’s a significant psychosocial and health economic burden, authors said.

The study’s limitations, including location of emboli and a predominantly male composition means more studies are needed, she added.

The authors concluded that carotid stenting and baseline low cerebral perfusion are predictors of high volume of embolic infarct associated with carotid revascularization procedures. "Subclinical embolization is not benign and volume of infarction directly influences cognitive outcome of procedure-related embolization. Cognitive evaluation should be considered in carotid disease management."

"It comes down to patient selection and patient-targeted therapy," said Dr. Zhou. "Right now we can say, ‘slow down,’ when it comes to carotid surgery. Consider which patients might benefit more and which might suffer worse effects. Look at risk factors, and integrate imaging of the brain structure."

Helping Veterans Achieve Vascular Health

With public education an important part of the expanded mission of the SVS Foundation, it was happy to participate in a free abdominal aortic aneurysm screening at the Veterans of Foreign Wars’ national convention in New Orleans in July.

Screeners uncovered AAA issues in 16 patients, of more than 1,000 screened during the event, offered by the non-profit AAAneurysm Outreach in partnership with the VFW, the SVS Foundation and W.L. Gore Inc.

The SVS Foundation distributed written materials that offered more information on AAAs and how to find a doctor who specializes in vascular diseases and abnormalities. Louisiana State University Healthcare physicians and Philips Medical provided equipment.

Dr. Zhou: Veterans Deserve Best Possible Care

We honor veterans this month, as we celebrate Veterans Day and acknowledge the sacrifices of those who have served the United States in the Armed Forces.

Dr. Zhou, now professor of surgery and chief of vascular surgery at the University of Arizona, spent 10 years as chief of vascular surgery at the Veterans Administration Palo Alto (California) Health Care System, treating veterans and conducting research relevant to them, such as the study outlined above.
"While in my new role, I will continue working with veterans to bring the newest treatment modality to our veteran population," said Dr. Zhou. "As a physician, I respect our veterans and love our veteran population. I firmly believe that this is the group of patients who have served our country and deserve to be cared in the best way possible."

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