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NEUROCOGNITIVE OUTCOMES IN OLDER ADULTS AFTER TRANSCATHETER AORTIC VALVE REPLACEMENT

To the Editor:

Transcatheter aortic valve replacement (TAVR), an approach developed for older, frail patients at risk for open cardiac operations represents 24% of all procedures for the treatment of aortic stenosis in Germany

and was recently approved by the Food and Drug Administration. Despite the benefits of avoiding open surgery, TAVR has been associated with more than tripling the rate of stroke in inoperable candidates versus medical therapy controls¹ and a doubling of the stroke rate in high-risk participants versus high-risk operative controls.² The incidence of acute hyperintensities or ischemia-like lesions on diffusion-weighted magnetic resonance imaging (MRI) of the brain is double what has been historically reported for surgical aortic valve replacement (AVR).^{3,4} Furthermore, the risk of neurologic events in TAVR patients remains considerably elevated relative to AVR at 24 months after the procedure.² Studies examining outcomes of TAVR have conducted only gross clinical evaluations of neurocognitive function in the relative short term; the longer-term implications of “neurologic events” and MRI lesions for older adults after TAVR and many other cardiovascular procedures have not been extensively studied.

Although it is intuitive to expect less-invasive approaches to yield improved outcomes, recent history has shown that this may not be the case. The less-invasive “off-pump” approach to coronary artery bypass grafting was primarily developed to avoid stroke and cognitive dysfunction thought to be caused by exposure to cardiopulmonary bypass, but studies have not conclusively demonstrated any real benefit in the incidence of stroke or postoperative cognitive impairment. The push to implement the off-pump approach for its perceived neurologic benefits may have actually worsened long-term cardiac outcomes because of the technical challenges associated with revascularizing a beating heart.⁵ In light of this historical perspective, the lack of mortality benefit from TAVR over AVR at 1 year,⁶ increased stroke rate in TAVR patients, and the increase in ischemic lesions on MRI after TAVR, we are left to

wonder just what real benefit this less-invasive approach offers.

The largest long-term studies of neurocognitive outcomes after cardiac procedures have focused on relatively younger patients undergoing bypass grafting and might underestimate the long-term impact in older adults undergoing different cardiovascular procedures associated with higher rates of stroke, cerebral emboli, or greater cognitive decline. Future research on neurocognitive outcomes from TAVR is necessary to determine the neurocognitive risks and benefits associated with this new procedure as well as the potential need for adjunctive neurologic interventions.

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