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System based practice requires a holistic approach: From the heart to the brain

Across the globe people are enjoying greater longevity. With greater lifespan comes increasing rates of structural heart disease and its dire complication, cardioembolic stroke. Aortic stenosis is the most prevalent cardiac valvular disease in the Western world. Because of advanced age and comorbidities, 30% of aortic stenosis patients are not surgical candidates. Transcatheter Aortic Valve Implantation/Replacement (TAVI/TAVR) is rapidly becoming the standard treatment in this patient population and being expanded to encompass populations of younger patients as an alternative to surgical aortic valve replacement (SAVR). Stroke is one of the most feared complications of TAVI/TAVR with an incidence ranging from 3.4-8% of patients.

Stroke is the 4th leading cause of death in the United States and 2nd leading cause of death in the EU and Europe. Twenty percent of stroke patients have cardiogenic sources of emboli with 50% of those related to non-valvular atrial fibrillation and greater than 90% of thrombi originating in the left atrial appendage (LAA). In one study, greater than 55% of patients with first time stroke and known non-valvular atrial fibrillation were on anticoagulation therapy, 68% were found to be subclinical. Percutaneous procedures have been developed to address the risk of cardioembolic stroke for those patients in whom standard medical therapy is contraindicated. LAA occlusion is available to this patient cohort with multiple device options and variable routes of deployment. Embolic events have been documented during LAA occlusion procedures with variable sources of embolic material identified through pathologic analysis of debris. As we treat the heart we must be cognizant of the impact on the brain. Total ischemic lesion volume of 1.5-4.3 cm³ equates to the death of approximately 2 million neurons and the decoupling of 1 billion synapses. The future of minimally invasive structural heart interventions must be married with the combination of endovascular protection and neuroendovascular intervention to treat the whole patient.

Biography

Evelyn M Garcia is the Chairman and Medical Director of Carilion Clinic Radiology and Chairman and Assistant Professor of Radiology of Virginia Tech Carilion School of Medicine. She is a member of the American College of Radiology Appropriateness Criteria Abdomen 2 Panel with fellowship training in Body Magnetic Resonance Imaging and additional Board Certification in Cardiovascular Computed Tomographic Angiography. She serves as a member of the board of the Virginia Chapter of the American College of Radiology, is an elected member of the Alpha Omega Alpha Medical Honor Society, serves on multiple boards and committees for Carilion Clinic and serves as the Radiologist for the multi-disciplinary structural heart valve team.

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