Prevalence of Microvascular Cardiac Allograft Vasculopathy

Kevin J. Clerkin MD, MSc; Ji H. Lee MD; Susan W. Restaino MD; Farhana Latif MD; Melana Yuzefpolskaya MD; Paolo C. Colombo MD; Maryjane A. Farr MD, MSc; Sabahat Bokhari MD

Department of Medicine, Division of Cardiology, Columbia University College of Physicians and Surgeons, New York, New York

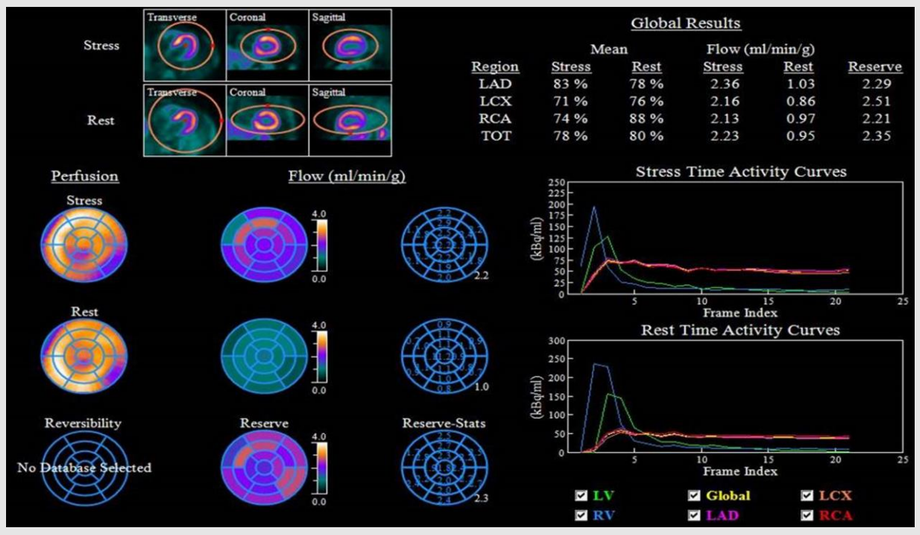
Background

- Cardiac allograft vasculopathy (CAV) is a pan-arterial vasculopathy, impacting both epicardial vessels and the microvasculature
- Coronary flow reserve (CFR) is the ratio of hyperemic coronary blood flow to resting coronary blood flow
- CFR quantifies myocardial blood flow (MBF) in both the epicardium and microvasculature, and in the absence of epicardial coronary disease represents microvascular disease
- Measures of microvascular disease including a decreased CFR on positron emission tomography (PET) and an increased index of microcirculatory resistance measured invasively have been associated with worse post-transplant outcomes
- We sought to define the prevalence of microvascular CAV in a post-transplant population

Methods

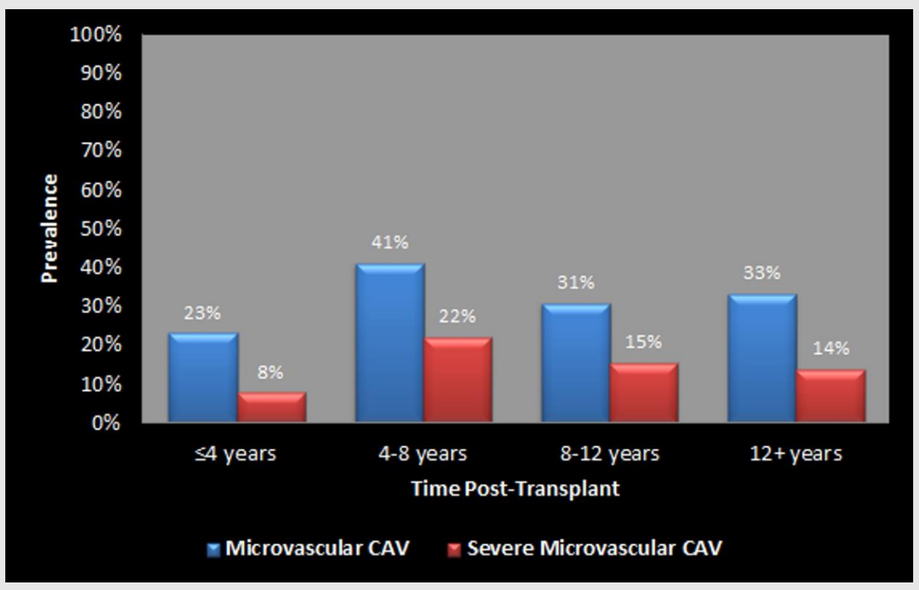
- 206 patients undergoing annual screening for CAV using dipyridamole stress N-13 NH3 PET between March 2016 and August 2017 were included
- Epicardial ischemia was defined as a perfusion abnormality and a summed difference score (SDS) ≥2
- Microvascular disease was defined as global CFR<2 (or stress MBF [sMBF] <1.75 mL/g/min when rest MBF exceeded 1 mL/g/min) in the absence of epicardial ischemia
- Severe microvascular disease was defined similarly, but with global CFR<1.5 or sMBF<1.5 mL/g/min (when rest MBF exceeded 1 mL/g/min)

Normal N-13 NH3 PET



Results

- The cohort was predominantly male (73%), with median age of 63 years (IQR 48-69y), and median time post-transplantation of 8 years (IQR 4.3-11.7y)
- The majority of patients had CAV 0 (56.8%) or CAV 1 (35.1%) on their most recent angiogram
- On PET, 91% of patients were free from ischemia (SDS<2), however microvascular CAV was present in 38.3% of patients



- The odds of microvascular CAV were slightly increased with increasing time post-transplantation (OR 1.004 95% CI 1.00-1.009, p=0.047)
- Severe microvascular CAV was present in 17.5% of the population and was relatively consistent over time (OR 1.003, 95% CI 0.997-1.008, p=0.032)

Conclusion

- Dipyridamole stress/rest N-13 NH3 PET detected microvascular CAV in more than 1 of 3 heart transplant recipients
- Further outcome studies are needed to determine if PET detected microvascular disease carries the same prognosis as invasively measured microvascular CAV

We do not discuss off label use and/or investigational use of drugs or devices. None of the authors have relevant financial relationships related to this presentation