November 2020

The Effect of Antiplatelet Therapy on Cardiac Allograft Vasculopathy and Survival Following Heart Transplantation: A Systematic Review and Meta-Analysis

Natasha Aleksova, Toronto

Cardiac allograft vasculopathy (CAV) is mediated by endothelial inflammation, platelet activation and thrombosis. The role of antiplatelet therapy to prevent CAV after heart transplantation (HT) remains unclear. The objective of this systematic review and meta-analysis was to summarize and appraise the available evidence on the effect of antiplatelet therapy after HT.

Methods: CENTRAL (Ovid), MEDLINE (Ovid), Embase (Ovid) and trial registers were searched from inception until April 30, 2020. Eligible studies included published abstracts and full-text randomized and non-randomized studies. Studies of HT recipients of any age, with any antiplatelet use at any point after HT were included. The outcomes of interest were the incidence and progression of CAV, CAV-related mortality, and all-cause mortality. Data was pooled using random-effects models.

Results: Seven observational studies were included, comprising of 2,023 patients with a mean age of 52 years, 22% female, and 47% had ischemic cardiomyopathy. In all studies, the intervention was acetylsalicylic acid (ASA) compared to no treatment over a mean follow-up of 7.1 years. All studies were at overall moderate to serious risk of bias. Date from 1,911 patients in 6 studies was pooled in the meta-analyses, which showed that ASA may result in a lower incidence of CAV (RR 0.75, 95% CI: 0.44-1.29) based on low certainty evidence. A significant subgroup effect was observed between HT recipients with ASA initiated early compared with those with ASA initiated any time after HT (test for subgroup differences: $Chi^2 = 4.81$, $p=0.03$, $I^2=79\%$) (Figure). Pooled data from the two studies (n=326) that conducted propensity-weighted analyses showed a 69% reduction in incidence of CAV (HR 0.31, 95% CI: 0.13-0.74). The evidence for the effect of ASA on all-cause mortality (HR 0.95, 95% CI: 0.67-1.34) or CAV-related mortality (HR 0.72, 95% CI: 0.16-3.28) is very uncertain.

There is limited evidence that ASA, particularly when initiated early following HT, may reduce the development of CAV. Randomized clinical trials are required to further evaluate the effects of antiplatelet therapy on CAV and survival after HT.