Catheter ablation outscores all other treatment modalities in reducing all-cause mortality and heart failure related morbidity in patients of persistent atrial fibrillation with systolic heart failure

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Background: Catheter ablation in the setting of persistent AF (PeAF) with heart failure (HF) is challenging and often has poor outcome. However, guideline and studies indicate ablation strategy in this group to reduce mortality and HF-related hospitalization.

Purpose: We have conducted a network meta-analysis (NMA) of all-cause mortality and improvement of HF-related QOL in patients of PeAF with systolic heart failure comparing rate controlling drugs (RCDs), anti-arrhythmic drugs (AAD), catheter ablation (CA) of PeAF and AV nodal ablation with univentricular or biventricular pacing (AVNA).

Method: Bayesian network meta-analysis of randomized controlled studies comparing mortality and QOL among individual treatment arms (e.g. RCDs, AADs, CA and AVNA) and pair-wise network meta-analysis comparing CA and other treatment arms (RCD, AAD and AVNA) were performed using MetInsight V3. Markov chain Monte Carlo (MCMC) modeling was used to estimate the relative ranking probability of each treatment group.

Results: Published data of 14 studies including 3698 patients were included in the NMA with a median follow-up of two years (1A, 2A). The Bayesian modelling with MCMC analysis for pair-wise comparison clearly demonstrated that, AAD [OR (95% CrI): 2.10 (0.43-9.0)], AVNA [OR (95% CrI): 1.32 (0.14-11.7)] and RCDs [OR (95% CrI): 2.76 (0.5-14.1)] have higher all-cause mortality than CA but not within the radar of statistical significance (1B). The Bayesian modelling with MCMC analysis for pair-wise comparison clearly demonstrated that, AADs [MD (95% CrI): 8.02 (-8.32-27.8)], AVNA [MD (95% CrI): 17.0 (-1.9-33.1)] and RCDs [MD (95% CrI): 13.0 (0.1-24.5)] have lesser improvement in QOL than CA but not within the radar of statistical significance (2B). Based on the Bayesian model, CA results in lower all-cause mortality and highest improvement of QOL in the patients of AF with HF (3A, 3B).

Conclusion: This shapes way for future treatment guidelines in patients with PeAF with HF group and points towards CA to be undertaken before medical therapy fails. This also paves way for further research to confirm the longevity of the beneficial effects and to find the specific subsets of AF with HF patients that would be benefited most from CA.

Abstract Figure