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All-cause mortality risk with aortic arch calcification in patients receiving dialysis

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Objectives: Epidemiological studies linked aortic arch calcification (AAC) with mortality risk in dialysis patients. Available evidence presented variable findings and raises conflict. Therefore, this study is aimed to compute the pooled risk of all-cause mortality with AAC in dialysis patients.

Methods: PubMed and Embase databases were searched for studies related to AAC and all-cause mortality. The search period was from inception to January 2020. The primary outcome was to compute the pooled risk of all-cause mortality due to AAC. Subgroup analysis was also performed based on dialysis modalities, AAC grade, and others. Meta-analysis was performed using comprehensive meta-analysis software.

Results: This meta-analysis was based on nine studies with a total of 3446 dialysis patients. Mean age of the patients were 58.48 ± 11.88 years. All-cause mortality risk was significantly higher in dialysis patients with AAC as compared to dialysis patients without AAC with a pooled risk ratio (RR) of 1.53 (95% CI: 1.20 – 1.97), $p = 0.0007$. Subgroup analysis found significantly higher risk in peritoneal dialysis (PD) patients [RR 2.50 (95% CI: 1.74 – 3.60), $p < 0.00001$] as compared to hemodialysis (HD) patients [RR 1.28 (95% CI: 1.01 – 1.61), $p = 0.04$]. Likewise grade 2+3 AAC patients [RR 1.77 (95% CI: 1.34 – 2.33), $p < 0.0001$] had significantly higher all-cause mortality risk as compared to grade 1 AAC patients [RR 1.35 (95% CI: 1.03 – 1.77), $p = 0.03$].

Conclusions: AAC in dialysis (HD as well as PD) patients increases the risk of all-cause mortality.