Early versus deferred coronary angiography in patients with out-of-hospital cardiac arrest - a systematic review and meta-analysis

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Background: The role of early coronary angiography (CAG) compared with deferred CAG on mortality and neurological outcomes in patients presenting with out of hospital cardiac arrest (OHCA) and no ST-elevation myocardial infarction (STEMI) pattern on electrocardiogram (ECG) remains disputed.

Purpose: The aim of this meta-analysis was to evaluate the impact of early versus deferred CAG on mortality and neurological outcomes in patients with OHCA and no STEMI.

Methods: OVID MEDLINE, EMBASE, Web of Science and Cochrane Library Register were searched from inception until July 18, 2022. Randomized clinical trials (RCTs) of patients with OHCA without STEMI that compared early CAG with deferred CAG were included. The primary endpoint was 30-day mortality. Secondary endpoints included mortality at discharge or 30-days, favorable neurology at 30-days, major bleeding, renal failure and recurrent cardiac arrest. A random-effects model was used with effect sizes presented as odds ratios (ORs).

Results: Of the 7,998 citations, a total of 5 trials randomizing 1524 patients to either early CAG or deferred CAG were included. There were 404 (26.5%) females. All studies were deemed to have at least a moderate risk of bias. Meta-analysis showed no significant difference in 30-day mortality with early versus deferred CAG (OR 1.17, CI 0.91 – 1.49; I² = 27%) (figure 1). There was no observed difference in favorable neurological outcome at 30 days (OR 0.88, CI 0.52 – 1.49; I² = 63%), major bleeding (OR 0.94, CI 0.33 – 2.68; I² = 39%), renal failure (OR 1.14, CI 0.77 – 1.69; I² = 0%), and recurrent cardiac arrest (OR 1.39, CI 0.79 – 2.43; I² = 0%) when comparing early and deferred CAG (figure 2).

Conclusions: In this study, early CAG was not associated with improved survival and neurological outcomes among patients with OHCA without STEMI. This meta-analysis does not support routinely performing early CAG in this select patient cohort. Future studies are needed to identify a subgroup of patients who may benefit from an early CAG strategy in this high-risk population.

Figure 1 Primary Outcome
Figure 2 Secondary Outcomes