Survival to hospital admission also increased significantly when drugs were given IV but not IO, and favored improved neurological outcome at discharge” Daya et al (2020).

Abstract:

Background: Antiarrhythmic drugs have not proven to significantly improve overall survival after out-of-hospital cardiac arrest (OHCA) from shock-refractory ventricular fibrillation/pulseless ventricular tachycardia (VF/VT). How this might be influenced by the route of drug administration is not known. Methods: In this pre-specified analysis of a randomized, placebo-controlled clinical trial, we compared differences in survival to hospital discharge in adults with shock-refractory VF/VT OHCA who were randomized by emergency medical services (EMS) personnel to an antiarrhythmic drug versus placebo in the Resuscitation Outcomes Consortium Amiodarone, Lidocaine or Placebo Study (ALPS), when stratified by the intravenous (IV) versus intraosseous (IO) route of administration.

Results: Of 3,019 randomized patients with known vascular access site, 2,358 received ALPS drugs IV and 661 patients by IO route. IO and IV groups differed in sex, time-to-EMS arrival, and some CPR characteristics, but were similar in others, including time-to-IV/IO-drug receipt. Overall hospital discharge survival was 23%. Compared to placebo, discharge survival was significantly higher in recipients of IV amiodarone (adj. risk ratio (RRadj) 1.26 (95% CI 1.06, 1.50); adj. absolute survival difference 5.5% (95% CI 1.5, 9.5)) and IV lidocaine (RRadj 1.21 (95% CI 1.02, 1.45)); absolute survival difference 4.7% (95% CI 0.7, 8.8)); but not in recipients of IO amiodarone (RRadj 0.94 (95% CI 0.66, 1.32)) or IO lidocaine (RRadj 1.03 (95% CI 0.74, 1.44)). Survival to hospital admission also increased significantly when drugs were given IV but not IO, and favored improved neurological outcome at discharge. There were no outcome differences between IV and IO placebo, indicating the access route itself did not demarcate patients with poor prognosis. The study was underpowered to assess IV/IO-drug interactions, which were not statistically significant.

Conclusions: We found no significant effect modification by drug administration route for amiodarone or lidocaine compared to placebo during OHCA. However, point estimates for the effects of both drugs compared to placebo were greater for the IV than IO route across all outcomes and beneficial only for IV. Given that the study was underpowered to statistically assess interactions, these findings signal the potential importance of the drug
administration route during resuscitation that merits further investigation.

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