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Paediatric IHCA: Is survival associated with time to defibrillation?

Delayed defibrillation (>2 minutes) in adult in-hospital cardiac arrest (IHCA) is associated with worse outcomes. In contrast, new research indicates that time to first defibrillation attempt was not associated with survival in paediatric IHCA. Time to first defibrillation was also not associated with return of circulation or favourable neurologic outcome, according to the findings published in JAMA Network Open.

About 6,000 children each year in the United States experience cardiac arrest while in the hospital. In adults, delayed defibrillation attempts of more than two minutes are a national quality measure.

Elizabeth A. Hunt, MD, MPH, PhD, of Johns Hopkins Charlotte Bloomberg Children's Center (Baltimore, MD), and co-researchers conducted a study to determine whether time to first defibrillation attempt in paediatric IHCA with a first documented shockable rhythm is associated with survival to hospital discharge. Secondary outcomes were return of circulation, 24-hour survival, and favourable neurologic outcome at hospital discharge.

In this cohort study, data were obtained from the Get With The Guidelines–Resuscitation national registry between 1 January 2000 and 31 December 2015. Participants (n = 477) were paediatric patients younger than 18 from 113 hospitals with an IHCA, a documented loss of pulse and least one defibrillation attempt from 2000 to 2015.

Most paediatric patients (71 percent) had a first attempt at defibrillation within two minutes of loss of pulse. Thirty-eight percent (179 patients) survived to hospital discharge. The median (interquartile range) reported time to first defibrillation attempt was 1 minute (0-3 minutes) in both survivors and nonsurvivors. Time to first defibrillation attempt was not associated with survival in unadjusted analysis (risk ratio [RR] per minute increase, 0.96; 95% CI, 0.92-1.01; P = .15) or adjusted analysis (RR, 0.99; 95% CI, 0.94-1.06; P = .86).

Additionally, there was no difference in survival between those with a first defibrillation attempt in 2 minutes or less vs. more than 2 minutes in unadjusted analysis (132 of 338 [39%] vs. 47 of 139 [34%]; RR, 0.87; 95% CI, 0.66-1.13; P = .29) or multivariable analysis (RR, 0.99; 95% CI, 0.75-1.30; P = .93). Time to first defibrillation attempt was also not associated with secondary outcome measures.

The findings are in contrast to children who have a cardiac arrest outside of the hospital setting, or adult patients in or out of the hospital, where worse outcomes are associated with defibrillation delayed more than two minutes. Dr. Hunt and co-authors offer several possibilities to explain their results.

The authors also cite important limitations to their study. The sample size; that most first defibrillation attempts were within two minutes of loss of pulse; and that the sudden nature of cardiac arrest may have led to some misclassification of time and other variables, the authors explain.

Source: JAMA Network Open
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