Letter by Xue et al Regarding Article, “Duration of Cardiopulmonary Resuscitation and Illness Category Impact Survival and Neurologic Outcomes for In-Hospital Pediatric Cardiac Arrests”

To the Editor:

The study by Matos et al1 on pediatric cardiac arrests at hospitals within the Get With the Guidelines—Resuscitation Registry (GWTG-R) showed that cardiopulmonary resuscitation (CPR) duration was inversely associated with survival to hospital discharge and neurologic outcome. The power of this study is its use of a large data set that includes and adjusts for most of the known factors that can affect final outcomes after cardiac arrest, such as patient age, pre-existing factors, treatment interventions, time and location of cardiac arrest, and initial pulseless rhythm.

However, it must be emphasized that patients with a longer CPR duration are probably more severely ill than those with a shorter CPR duration, and more severely ill patients may have more complex causes of cardiac arrests and worse clinical outcomes (death, brain damage, etc) than less ill patients.2 In our opinion, no matter how refined the adjustment is for differences in illness burden and relevant risk factors, it is never possible to ensure a complete adjustment for differences among patients with the different CPR durations. Furthermore, this study did not exclude the patients in whom do-not-attempt resuscitation decisions had been carried out because CPR efforts were clearly futile. Thus, we argue that CPR duration must be established on a case-by-case basis and must take into account other known determinants of survival and neurologic outcomes.3 The authors claim that their data do not provide a simple solution for when to discontinue CPR. We believe that such a solution does not exist, and it seems unlikely that one will be developed in the future.

In addition, we do not agree with them that a proportion of children who would presumably die without CPR survive with a favorable neurologic outcome even after prolonged CPR. Actually, almost all cardiac arrest patients without CPR will die. However, the goal of CPR should be to reverse premature death, not to prolong inevitable death. Thus, only when cause of cardiac arrest is potentially reversible are aggressive and prolonged resuscitation efforts worthwhile.4 The thought-provoking finding of this study that intact survival after >35 minutes of CPR efforts is as high as 16.2% in certain patient groups might reflect the ability of resuscitation teams to identify and treat potentially reversible causes of cardiac arrest. Furthermore, this result should be credited to high-quality CPR efforts. A significantly prolonged CPR duration may only mean implementation of aggressive resuscitation efforts and comprehensive care strategies or that time was allowed for interventions to work.

Finally, a notable limitation of quality improvement metrics of the GWTG-R data set is the lack of assessment on performance of CPR.4 It is reported that, in adult patients with in-hospital cardiac arrest, incidence of resuscitation system errors is as high as 26.8% to 40.4%, and the presence of errors is associated with a decreased survival.5 Thus, we cannot exclude confounding contribution of resuscitation system errors of the studied hospitals from the results of this study.

Disclosures

None.

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