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Letter to the Editor

Reply to: In a paediatric animal model of cardiac arrest: Is diastolic blood pressure associated with survival during resuscitation?

To the Editor,

Thank you for the opportunity to reply to the letter by Dr. Manrique et al. We appreciate their suggestion to expand the investigation of the association of hemodynamic data during cardiopulmonary resuscitation (CPR) with survival to include the systolic arterial blood pressure (SBP). Our interest in hemodynamic data during CPR has been to compare the effects of $ETCO_2$-guided CPR with those of standard CPR in initial studies.[1–3] In those studies, we chose parameters associated with three perfusion pressures during CPR that included: cerebral perfusion, mean arterial blood pressure (MAP) — mean intracranial pressure (ICP); systemic perfusion, MAP — mean central venous pressure (CVP); and myocardial (or coronary) perfusion, diastolic arterial blood pressure (DBP) — diastolic CVP. Unfortunately, these perfusion pressures do not include the measurement of SBP.

The cohort of animals that received 10 min of basic life support (BLS) in our study[4] underwent a combination of asphyxia and fibrillation arrest. The addition of fibrillation arrest to asphyxia prevented return of spontaneous circulation (ROSC) during BLS so that $ETCO_2$ and hemodynamic values could be captured without concern for including animals that achieved ROSC. The addition of fibrillation meant that ROSC was only achievable during advanced life support (ALS). Therefore, we believe it is less likely that the difference in DBP between survivors and non-survivors in our study was secondary to early ROSC.

In our recent report,[4] our interest in the DBP is in its use as a surrogate for myocardial perfusion which has been shown to correlate with the rate of ROSC.[5–7] The calculation of myocardial perfusion during clinical CPR is difficult. If a central venous line is present, most bedside monitors only report mean CVP which is not used in the calculation of myocardial perfusion. Obtaining a *diastolic CVP* often requires renaming the CVP trace on the monitor as pulmonary artery so that diastolic venous values are shown. The use of DBP alone as the surrogate for myocardial perfusion in this clinical situation is easier than calculating myocardial perfusion pressure. Target DBP values during CPR of 25 mmHg for infants and 30 mmHg for children have been reported.[8] Thus, our report focused on DBP throughout resuscitation (BLS and ALS), as well as the DBP response to both endogenous epinephrine circulation and exogenous epinephrine administration. We look forward to continued research from Dr. Manrique et al. about the association of SBP with survival and whether SBP is easier to obtain or superior to DBP in directing resuscitative efforts.

Conflict of interest statement

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