Correspondence

Letter by Shiyovich et al Regarding Article, "Resumption of Chest Compressions After Successful Defibrillation and Risk for Recurrence of Ventricular Fibrillation in Out-of-Hospital Cardiac Arrest"

In their study, Conover et al[1] investigated whether ventricular fibrillation (VF) recurrence in first 30 s post shock of cardiac arrest victims with initial rhythm of VF is related to timing of post shock chest compression (CC) resumption.

Several clarifications and potential additions would help to ascertain the relationship between resumption of CC after successful defibrillation and recurrence of VF better.

The authors stated that defibrillation of VF was successful if VF was terminated for ≥5 s. In group CC1, CCs were resumed 1 to 5 s post shock. Considering the latter time intervals, the definition of successful defibrillation and VF recurrence in this subgroup should be clarified.

The reasons for the observed disparities in the time of cardiopulmonary resuscitation (CPR) initiation after defibrillation were not described by the authors. It could stem from patient- or provider-related differences, hence indicate potential confounders. A comparison of baseline and resuscitation (eg, rate and quality of CCs, which could affect VF recurrence) characteristics between early and delayed-CPR prompt groups could assist in eliminating potential confounders.

The authors included VF recurrence in the first 30 seconds as an outcome, resulting in an inclusion of only 69 of 166 refibrillations. The latter were subdivided into 4 groups resulting in relatively small numbers of successful shocks and refibrillation in each group, possibly underpowered for reaching statistical significance when comparing VF recurrences according to CPR prompt group. This limitation is further emphasized as the rate of spontaneous refibrillations in this study (ie, CC4=22%) consistent with previous reports was relatively high.[2] Examining Table 2 and Figure 4, it is evident that the rates of VF recurrence for each of the CC1 to CC3 groups (ie, CPR prompt within the investigated 30 s) seem to be higher compared with CC4 (no CPR initiation within 30 seconds post shock). However, the authors only compared the hazard ratios of each group versus CC1. We think that excessive VF recurrence related to CPR prompt could not be fully ruled out by the presented data. The latter is important because such VF recurrence was associated with reduced prehospital return of spontaneous circulation (P=0.04) and survival to admission (33% versus 50%; P=0.1, not significant possibly because of small sample). Additional analyses could shed more light on this potential association: comparing VF recurrence rate in groups CC1–CC3 separately and combined versus CC4. Furthermore, to evaluate and compare the time between CC resumption to VF recurrence according to the 4 CPR initiation groups because increased risk for VF recurrence was reported within the first 2 seconds and ≈8 seconds after CPR initiation.[3,4] High rate of refibrillations within this time frame would insinuate excessive VF recurrence associated with CPR resumption.

The authors focused mostly on the rate of VF recurrence; however, immediate resumption of CPR has been shown to cause a trend toward a longer VF,[3] which was shown to be significantly associated with worse outcomes.[5] Thus, evaluation of the time in recurrent VF according to CC prompt time could be of significant interest as well.

Disclosures

None.

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References

1. Conover Z, Kern KB, Silver AE, Bobrow BJ, Spaite DW, Indik JH. Resumption of chest compressions after successful defibrillation and risk for recurrence of ventricular fibrillation in out-of-hospital cardiac arrest. *Circ Arrhythm Electrophysiol*. 2014;7:633–639.
2. Hess EP, White RD. Ventricular fibrillation is not provoked by chest compression during post-shock organized rhythms in out-of-hospital cardiac arrest. *Resuscitation*. 2005;66:7–11.
3. Berdowski J, Tijssen JG, Koster RW. Chest compressions cause recurrence of ventricular fibrillation after the first successful conversion by defibrillation in out-of-hospital cardiac arrest. *Circ Arrhythm Electrophysiol*. 2010;3:72–78.
4. Shiyovich A, Gerovich A, Katz A. Recurrence of ventricular fibrillation after successful conversion, may be associated with immediate post-shock chest compressions: a case report. *Br J Med Med Res*. 2013;3:722–726.
5. Berdowski J, ten Haaf M, Tijssen JG, Chapman FW, Koster RW. Time in recurrent ventricular fibrillation and survival after out-of-hospital cardiac arrest. *Circulation*. 2010;122:1101–1108.

(*Circ Arrhythm Electrophysiol*. 2014;7:1277.)

Circ Arrhythm Electrophysiol **is available at http://circep.ahajournals.org** **DOI: 10.1161/CIRCEP.114.002333**

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Circ Arrhythm Electrophysiol. 2014;7:1277
doi: 10.1161/CIRCEP.114.002333
Circulation: Arrhythmia and Electrophysiology is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231

Print ISSN: 1941-3149. Online ISSN: 1941-3084