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Letter to the Editor

Ventilation during out-of-hospital cardiac arrest

We read with great interest the article by Chang MP, et al, which evaluated the bio-impedance ventilation (lung inflation) waveforms in the pause between chest compression segments among out-of-hospital cardiac arrest patients who received 30:2 compression ventilation (CV) ratio of cardiopulmonary resuscitation (CPR).¹ They found survival improvement in patients with ventilation waveforms in $\geq 50\%$ of pauses (Group 2) than in $< 50\%$ of pause (Group 1). This finding is noteworthy because it showed ventilation metric would be included in one of high quality CPR components.

However, regarding the study result, there is something to be noted. According to the international guideline, at least 4 s is needed for ventilation during compression pause of 30:2 CV ratio CPR; 1 s for first inspiration, 1 s for the first expiration, 1 s for second inspiration, and 1 s for second expiration.^{2,3} It means that 2 ventilations for 4 s. Thus, the ratio of ventilation to time (sec) (RVT) would be 0.5. In the study by Chang MP, the median duration of pauses was similar in two groups (5.3 s in Group 1 and 5.2 s in Group 2). However, the median number of ventilation were significantly different (3 in Group 1 and 8 in Group 2). RVT would be 0.57 in Group 1 and 1.54 in Group 2. This inspection implies that international guideline adherence was better in Group 1 than in Group 2. For real practice by trained CPR providers at scene, it seemed to be hard and unbelievable that a 30:2 ratio CPR was performed with RVT value at 1.54. Additionally, there was no significant difference regarding ventilation waveform amplitude (1.04 in Group 1 and 1.07 in Group 2).

Chang et al concluded that ventilation with lung inflation occurs infrequently during 30:2 CV ratio of CPR and ventilation in $\geq 50\%$ of pauses was associated with significantly improved rates of ROSC and survival. As their conclusion, this study would be a first step to revise the ventilation metric of traditional 30:2 CV ratio of CPR. However, we would like to recommend to revisit their data again, especially regarding variables of ventilation and waveform, because RVT in Group 2 seems to be unrealistic.

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