



Letter to the Editor

Adhesive glove CPR: Does it really fit alone?

Sir,

We have read with interest the article by Shih et al.¹ The adhesive glove device cardiopulmonary resuscitation (AGD-CPR), a new technique to perform active compression–decompression CPR (ACD-CPR) was tested in baby pigs. The device was reported to be much better than hands without the glove, but the authors report that use of an impedance threshold device (ITD) did not make AGD-CPR better.

Several observations were made to suggest the title of the article may be misleading. It is well known that when the coronary perfusion pressure (CPP) is <20 mmHg, outcomes are generally poor.² The authors report that CPP increased from 9.6 ± 9.1 to 19.7 ± 4.6 to 25.6 ± 12.1 mmHg with standard CPR, AGD-CPR and AGD-CPR+ITD. While the study was clearly not sufficiently powered from a statistical perspective, one must ask, how would you rather treat your baby, with or without the ITD? The CPP of 25.6 mmHg is the clear cut winner.

Other questions remain with this report, including whether the endotracheal tube was cuffed or not. The absence of seal may be deleterious for the ITD. Why were the right atrial pressures so high? Too much compression force maybe? It seems by the method section and the pictures that CPR has been performed with two hands. As the piglets weighed only ~15 kg, this technique may have resulted in too much compression force and may explain the markedly elevated level of right atrial pressures. What ITD was used? The one that is for standard CPR (that opens at 10 cm H₂O) or the one for ACD-CPR (that opens at 16 cm H₂O)? Perhaps most importantly, did the anesthesia machine prevent the patient (or piglet) from breathing, and if so, did it close off the airway after each positive pressure breath, and thus act like an ITD? While it is not explicit in the article, the use of an automatic anesthesia ventilator which produces volume breath at a fixed rate, and which does not trigger an additional breath in respond to the negative pressure induced by lifting of the chest, implies that the ventilator and breathing system did provide an impedance to the inspiration of gasses in the decompression phase of ACD. We believe this can explain the lack of additional effect when ITD is add to the system.

We have been using ACD-CPR in patients in France for many years and have consistently observed a further benefit with the ITD. The very short ventricular fibrillation time of 3 min and CPR durations are strikingly different from what happens in the patients in the field, where CPR is generally performed for 15–30 min. Further, the strength and force necessary to perform ACD-CPR on adults is much greater than in little piglets or a pediatric manikin.^{3,4} Unfortunately, by their study design, the authors may have missed an important

opportunity to see the benefits of the whole system, as it takes some time and at least two devices to truly 'prime the pump' during CPR.

Statement of authorship

All authors have participated to the conception, design and writing of this manuscript. This manuscript represents valid work and that neither this manuscript nor one with substantially similar content under our authorship has been published or is being considered for publication elsewhere.

Conflict of interest statement

None.

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Ethical adherence

NS.

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Copyright constraints

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