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Hemodynamics of corpuls cpr in a Porcine Model of Cardiac Arrest

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Purpose of the study

Whether mechanical chest compression devices can be used for cardiopulmonary resuscitation (CPR) is still a subject of debate.

Since data on chest compression quality unbiased by pharmacotherapy is rare we present current hemodynamic data on the fairly new *corpuls cpr* (GS Elektromedizinische Geräte G. Stemple GmbH) from our animal model.

Materials and methods

Approved by the animal welfare authorities (LANUV NRW, reference 84-02.04.2017.A176), 10 domestic swine were sedated, ventilated and equipped with pressure transducers and a flow probe around the left carotid artery.

Following baseline (BL) measurement, ventricular fibrillation was induced by alternating current and ventilation was discontinued. After 5 minutes of untreated cardiac arrest, mechanical CPR was initiated (depth 6.0cm, continuous, 100 compressions per minute) and ventilation was resumed. Defibrillations were performed after 2, 4 and 6 minutes. No cardiovascular pharmacotherapy was applied.

Arterial blood pressure (SAP, DAP, MAP), endtidal carbon dioxide (etCO₂) and mean carotid blood flow (CFmean) were averaged each 2 minute intervals (mean ± SD).

Results

ROSC was achieved in 3 out of 10 animals. Hemodynamic data are presented in figures and tables.

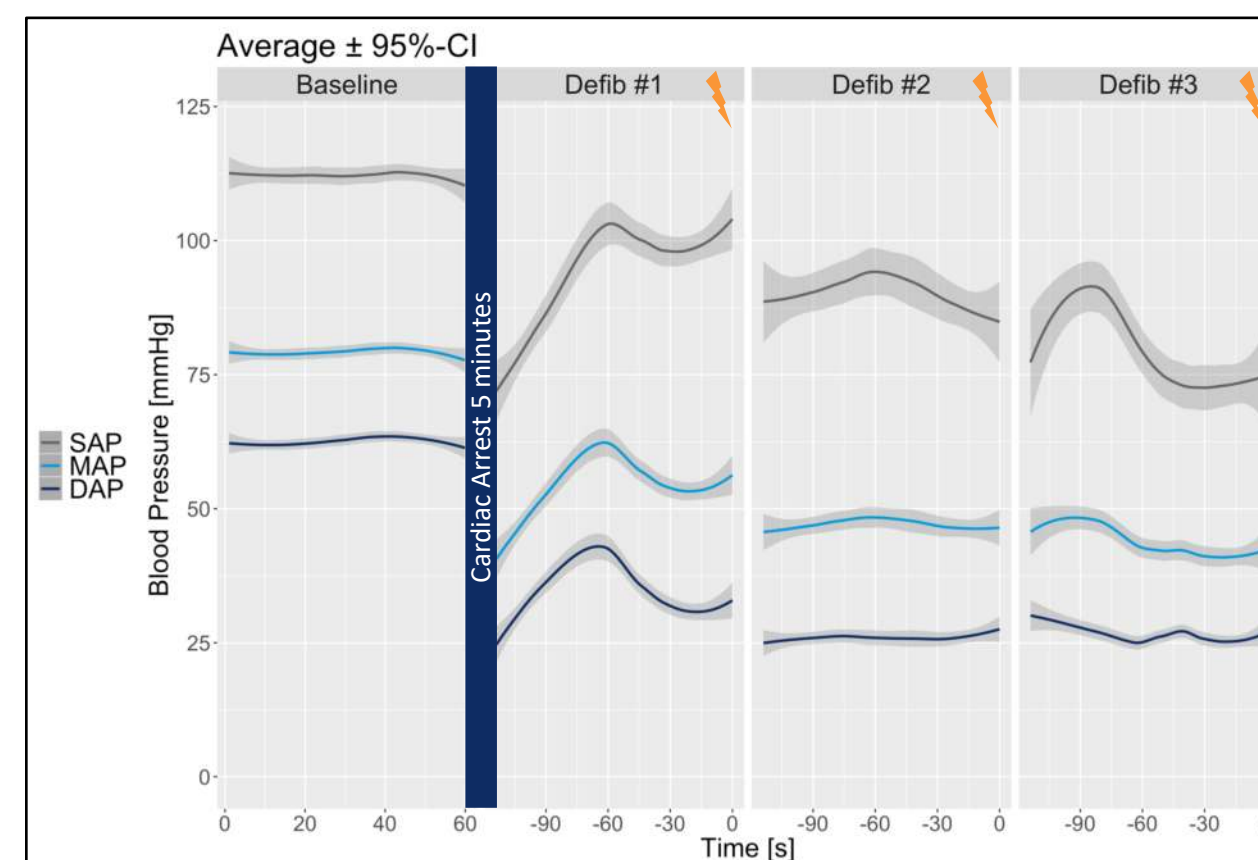
Conclusions

Our data support another group's findings that *corpuls cpr* generates near to normal blood pressure and one third of baseline CFmean. [1] Therefore, we strongly encourage further clinical examination on *corpuls cpr* in comparison to manual CPR or other chest compression devices.

Reference

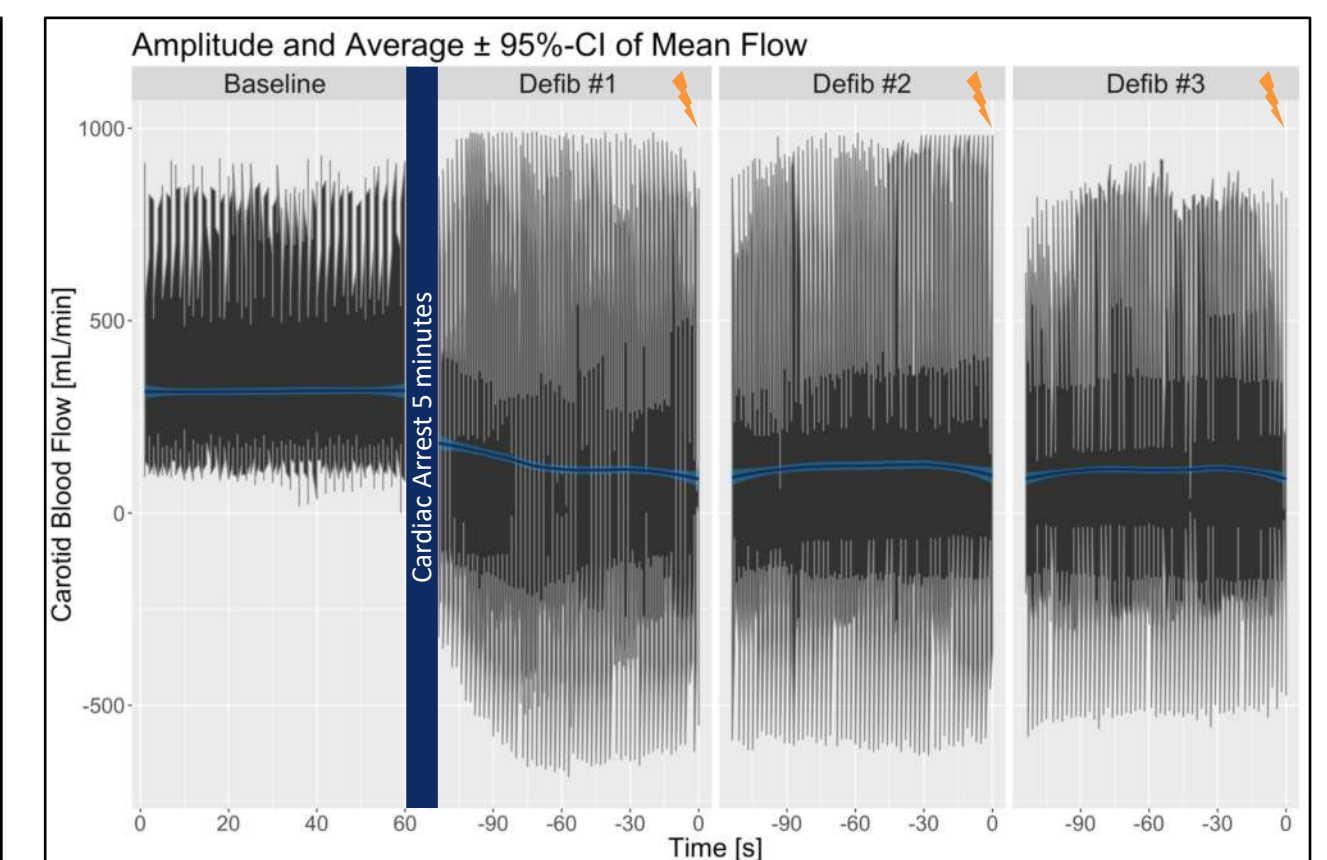
- 1) Eichhorn S, Mendoza A, Prinzing A, Stroh A, Xinghai L, Polski M, Heller M, Lahm H, Wolf E, Lange R, Krane M: *Corpuls CPR Generates Higher Mean Arterial Pressure Than LUCAS II in a Pig Model of Cardiac Arrest.* BioMed Research International 2017:5470406. <https://doi.org/10.1155/2017/5470406>.

Blood Pressure



	BL	CPR 0 - 2 min	CPR 2 - 4 min	CPR 4 - 6 min
SAP [mmHg]	112 ± 10	93 ± 28	94 ± 40	78 ± 27
MAP [mmHg]	79 ± 7	53 ± 17	52 ± 37	43 ± 12
DAP [mmHg]	63 ± 6	33 ± 15	26 ± 9	26 ± 8
etCO ₂ [mmHg]	41 ± 3	27 ± 5	34 ± 9	41 ± 9

Carotid Blood Flow



	BL	CPR 0 - 2 min	CPR 2 - 4 min	CPR 4 - 6 min
CFmean [mL/min]	317 ± 41	128 ± 68	118 ± 60	110 ± 43
CFmean [% BL]	100	42 ± 23	39 ± 21	37 ± 17

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