

Wu D, Bassuk J, Arias J, Peschiera I, Lamet A, Kurlansky P, Adams JA. Post-resuscitation reperfusion injury: Comparison of periodic Gz acceleration versus thumper CPR. Resuscitation 2006;70:454-62.

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The effects of whole body, periodic acceleration (pGz) on cardiopulmonary resuscitation outcome, organ blood flow and tissue inflammatory injury were examined in an experimental pig model, and compared with Thumper (TH)-CPR. VF was induced in 16 pigs, and remained untreated for 3 min, followed by either pGz-CPR or TH-CPR for 15 min. Defibrillation attempts were made at 18 min of VF. Six of eight animals had ROSC in both groups. Post-arrest myocardial dysfunction was present in both groups and progressed over hours. pGz-CPR animals had less wall motion abnormality and higher left ventricular ejection fraction than TH-CPR. The post-resuscitation haemodynamic variables returned to baseline after 3h of ROSC in pGz-CPR group, and remained low in TH-CPR group. The brain blood flow during CPR was similar between TH-CPR and pGz-CPR, 17% and 20% of pre-fibrillation values, respectively. The cardiac blood flow during CPR was significantly lower in pGz-CPR than TH-CPR (TH: 10.2% and pGz: 1.9% of pre-fibrillation value), as well as in other organs. The brain and heart blood flow was significantly higher than pre-fibrillation values after 30 min of ROSC in both groups. The pGz group had significantly higher blood flow in brain, heart and kidney than TH-CPR after 30 min of ROSC. Blood flow in all organs decreased below pre-fibrillation values at 2h of ROSC. Tissue inflammatory injury progressed over hours in the post-resuscitation phase. pGz-CPR group had significantly lower myeloperoxidase (MPO) activity and plasma creatine phosphokinase (CPK) and cardiac troponin I, TNF-alpha, and IL-6 than TH-CPR. Results from the present study demonstrate again that pGz-CPR is an effective method of cardiopulmonary resuscitation, with less post-reperfusion injury compared to TH-CPR.