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EFFECTS OF PERITONEAL COOLING ON INFLAMMATION AFTER CARDIOPULMONARY RESUSCITATION IN RABBITS

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Objectives To explore the effects of different cooling methods on systemic inflammation after cardiopulmonary resuscitation (CPR) in New Zealand rabbits.

Methods Forty eight adult New Zealand rabbits were induced ventricular fibrillation by AC current and were resuscitated after cardiac arrest for 5 min. After restore of spontaneous circulation (ROSC), the rabbits were randomly divided into four groups according to the way of cooling methods, nomothermia group (NT), peritoneal cooling group (PC), surface cooling group(SC) and local cooling group(LC). The plasma concentration changes of tumour necrosis factor-α (TNF-α)and interleukin-6 (IL-6)were measured in each group at different time points before and after ROSC. Liver tissue were removed after ROSC 12h, the level of nuclear factor-Kβ (NF-κβp65)and (NF-κβp50)were tested by Western-Blot. The survival time was recorded and compared after ROSC 96 h. One-way ANOVA or Mann-Whitney rank was used to determine the statistical significance between two groups. LSD-t test for multiple comparisons, R×C test for ROSC comparisons.

Results The levels of plasma TNF-a concentration in PC group were inferior to NT group after ROSC, p value were 0.020, 0.010 and 0.014 at 24 h, 48 h and 72 h respectively. The TNF-a level in PC group was also inferior to SC and LC group after ROSC 72 h (PC: SC, p=0.020; PC: LC, p=0.042). The IL-6 levels in PC group were inferior to NT group after ROSC 12h, p value was 0.013, 0.03, 0.010 and 0.009 respectively. The concentrations of P65 and P50 in PC group were lower than those in other groups ($p<0.05$), while there were no differences between the other three groups. The average survival time was 19.5h, 57h, 37.3h, 21.5h in NT, PC, SC and LC group after ROSC respectively, (PC:NT, p=0.024; PC:SC, p=0.128; PC:LC, p=0.052, but SC:NT, p=0.319, SC:LC, p=0.266).

Conclusions The neotype peritoneal cooling could rapidly induce and maintain hypothermia, and decrease the peritoneal temperrature quickly, thus inhibit liver NF-κβ activation, reduce TNF-α and

IL-6 release, subsequently relieve systemic inflammation after ROSC and prolong rabbit survival time.