EFFECTS OF DIFFERENT RESUSCITATING FLUID VOLUME ON INTERNAL ORGAN FUNCTIONS IN A CANINE MODEL WITH BURN-BLAST COMBINED INJURY (199)

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Objective: Our previous study suggested that higher fluid volume than Parkland formula may get better resuscitation in a canine model with burn-blast combined injury. In this study we tried to figure out an optimal resuscitating fluid volume in the animal model by determining its effects on internal organ functions.

Method: 32 healthy male beagle dogs were subjected to a burn-blast combined injury (35% total body surface area full thickness burn combined with middle severity blast injury) and randomly assigned into 4 groups, namely, the Parkland group (P), volume-increased group 1 (V1), 2 (V2) and 3 (V3), with 8 dogs in each group. The Parkland group was resuscitated with the Parkland formula, while additional 10%, 20%, 30% fluid were given to the group V1, V2, and V3, respectively, and their infusing rates were also increased by 10%, 20%, and 30%, respectively. Cardiac output, extravascular lung water index were determined with PiCCO (Pulse indicated Continuous Cardiac Output) device pre and 4, 8, 24, 48 h post injury. Serum alanine aminotransferase, creatinine, blood urea nitrogen were determined through biochemical arrays pre and 4, 8, 24, 48, 72 h post injury. Arterial oxygen pressure was determined with blood gas analysis pre and 4, 8, 24, 48 h post injury. Urinary volume was recorded throughout 24h post injury to calculate the urinary output 4, 8, 24h post injury.

Result: Urinary output in group V2 and V3 at 4h or 24h post injury were both remarkably higher than that in group P or V1 (P<0.05). Cardiac output in group V2 and V3 was both remarkably higher than that in the group P (P<0.05), while cardiac output in the group V2 at 24h was significantly higher than that in the group V3 (P<0.05). Serum alanine aminotransferase in the group P and V3 were remarkably higher than that in the V2 at 24h, 48h and 72h post injury (P<0.05). No significant difference was seen between groups on extravascular lung water index, creatinine and arterial oxygen pressure (P>0.05). Conclusion Burn-blast combined injury concerned in this experiment requests additional 20% fluid when being resuscitated with the Parkland formula. This volume promotes cardiac output, remains urinary output and protects internal organ functions during the early stage post injury without fluid overloaded.