

S35-3 Experimental study on the treatment for crush syndrome using rat model of the disease

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Crush syndrome (CS) is resulted from natural and other types of disasters characterized by systemic disorders expressing various pathophysiological conditions such as myoglobinuric renal failure and hyperkalemia. CS is caused by destruction of muscle tissues followed by the potential influx of myoglobin and potassium into the systemic circulation. Pathophysiology of CS have been elucidated by many clinical and basic researches since reported by Bywater et al. in 1941. Whereas CS has been treated based on many clinical experiences at present, basic researches using well-established animal model can be required for development of evidence-based treatment. Although several animal models have been proposed in the past, most of them focus on just limited clinical symptoms of CS. Thus, the animal model which reflects a diversity of pathophysiology of CS is expected to be established. We developed a CS model and examined the conditions of fluid infusion in terms of ingredient, infusion volume, and infusion rate. The survival rate of CS model was improved by infusion of the fluid containing Tris, showing pH buffering effect in blood, compared with physiological saline. Our findings indicate that a type of infusion fluid and infusion conditions at initial stage of CS treatment affect the survival rate and prognosis. Our CS model helps to understand the pathophysiology of CS and to find out more effective treatment of CS.