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Apoptosis Pneumocyte Type I & II on LSBT Resuscitated Haemorrhagic Hypovolemic Shock Experimental Study on Rat Sprague Dawley

Abstrak :

Commonly used liquid to correct the haemorrhagic hypovolemic shock is Ringer Lactate RL. However the number of lung cell apoptosisin cases resuscitated with RL increased three-fold. Liquid Substitution of Blood Transfusion (LSBT) is one of the alternative fl uid thatcan be given in the pre hospital period with promising advantages. The objective of this research was to verify whether apoptosis ofpneumocyte type I and type II cells after resuscitation using LSBT is lower than those resuscitated with RL. True Experimental Designon 30 Sprague Dawley Rat were done. Hemorrhagic shock were induced by needle puncture on canthus medialis and sustained for30 minutes. Rats were randomized into three groups, 10 subjects each, i.e. Group LSBT received LSBT 4ml/kg body weight as theresuscitation fl uid, Group RL received Ringer Lactate 20 ml/kg body weight and Group Bleeding which received no resuscitationfl uid. Lung tissue samples were taken three hours after the completion of resuscitation for analysis of Caspace 9, AIF, and MDA usingimmunohistochemical method. Tunnel method was used to demonstrate apoptosis. Body weight, hemoglobin, natrium, lactate and basedefi cit of the three groups of rats were homogenous. Both pneumocyte I and pneumocyte II showed signifi cant increased activity ofthe caspace cascade as measured by the expression caspace 9 and AIF after RL more than LSBT p = 0.000. MDA expression amongpneumocte II showed no difference between LSBT and RL groups p = 0.090. While signifi cant difference was found among pneumocyteI between LSBT and RL, with higher MDA expression in the RL group p = 0.000. Tunnel method to measure the apoptosis rate ofpneumocyte I showed signifi cant difference in favor of LSBT p = 0.000 but not of pneumocyte II p = 0.090. LSBT resuscitation showedsignifi cant benefi cial result on the lower apoptosis rate, supported by both Caspace Cascade, AIF and MDA expression compared toRinger Lactate. This new fact may open new opportunity to treat shocked hemorrhagic patients with a new fl uid composition to achievebetter result with less pulmonary complications.

Keyword :

pneumocyte I, pneumocyte II, LSBT, hypovolemic shock, apoptosis

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