Influence of different fluid resuscitation techniques on the number of myeloid-derived suppressor cells in rats

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ABSTRACT. We investigated the influence of different fluid resuscitation techniques on the number of myeloid-derived suppressor cells (MDSCs) in rats. Seventy-two healthy Sprague-Dawley rats were randomly divided into groups that received sham operation (Sham group), hypertonic saline (HRS group), lactated ringer’s solution (LRS group), or crystalloid solution (LCRS group). Six rats from each group were sacrificed by cervical dislocation at 12, 24, and 48 h after resuscitation. The spleens were harvested under sterile conditions and spleen cell suspension was prepared. The number of MDSCs was detected using flow cytometry. The number of MDSCs in the Sham group did not differ significantly among the different time points. Compared with the Sham group, the number of MDSCs after the use of the different fluid resuscitation techniques increased to varying extents and the differences among the groups were significant. The number of MDSCs in the HRS group was much lower than that of the LRS and
LCRS groups at both 24 and 48 h (P < 0.05). At 12 h, the number of MDSCs in the HRS group was significantly lower than that of the LRS group (P < 0.05). The differences between the HRS and LCRS groups were not statistically significant. Shortly after hemorrhagic shock resuscitation, the immune function of rats was suppressed to a varying extent and was gradually restored over time. Resuscitation with HRS alleviated the immunosuppression at the early stage after shock.

**Key words:** Rats; Hemorrhagic shock; Fluid resuscitation; MDSCs; Myeloid-derived suppressor cells