

This study was designed to compare the effects of and complications associated with 3% HSS, 7.5% HSS, and standard fluid in resuscitation” Han et al (2015).

Reference:

Han, J., Ren, H.Q., Zhao, Q.B., Wu, Y.L. and Qiao, Z.Y. (2015) Comparison of 3% and 7.5% Hypertonic Saline in Resuscitation After Traumatic Hypovolemic Shock. Shock. 43(3), p.244-9.

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Abstract:

Hypertonic saline solutions (HSSs) (7.5%) are useful in the resuscitation of patients with hypovolemic shock because they provide immediate intravascular volume expansion via the delivery of a small volume of fluid, improving cardiac function. However, the effects of using 3% HSS in hypovolemic shock resuscitation are not well known. This study was designed to compare the effects of and complications associated with 3% HSS, 7.5% HSS, and standard fluid in resuscitation. In total, 294 severe trauma patients were enrolled from December 2008 to February 2012 and subjected to a double-blind randomized clinical trial. Individual patients were treated with 3% HSS (250 mL), 7.5% HSS (250 mL), or lactated Ringer’s solution (LRS) (250 mL). Mean arterial pressure, blood pressure, and heart rate were monitored and recorded before fluid infusion and at 10, 30, 45, and 60 min after infusion, and the incidence of complications and survival rate were analyzed. The results indicate that 3% and 7.5% HSSs rapidly restored mean arterial pressure and led to the requirement of an approximately 50% lower total fluid volume compared with the LRS group ($P < 0.001$). However, a single bolus of 7.5% HSS resulted in an increase in heart rate (mean of 127 beats/min) at 10 min after the start of resuscitation. Higher rates of arrhythmia and hypernatremia were noted in the 7.5% HSS group, whereas higher risks of renal failure ($P < 0.001$), coagulopathy ($P < 0.001$), and pulmonary edema ($P < 0.001$) were observed in the LRS group. Neither severe electrolyte disturbance nor anaphylaxis was observed in the HSS groups. It is notable that 3% HSS had similar effects on resuscitation because both the 7.5% HSS and LRS groups but resulted in a lower occurrence of complications. This study demonstrates the efficacy and safety of 3% HSS in the resuscitation of patients with hypovolemic shock.



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