# HYPERTONIC SALINE RESUSCITATION IN TRAUMA FOLLOWING DAMAGE CONTROL LAPAROTOMY: DOES IT ATTENUATE INFLAMMATION

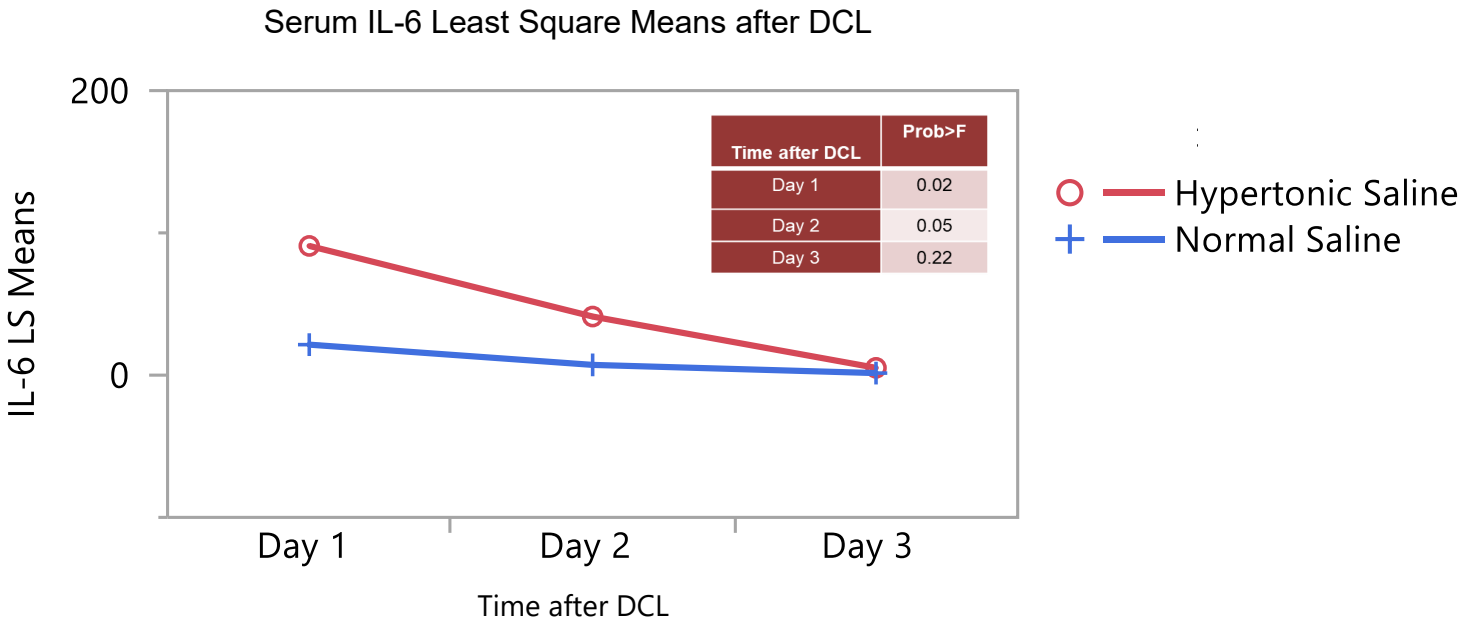
This study sought to determine if inflammatory cytokine levels were impacted by hypertonic saline solution (HTS) resuscitation in trauma patients undergoing damage control laparotomy (DCL).

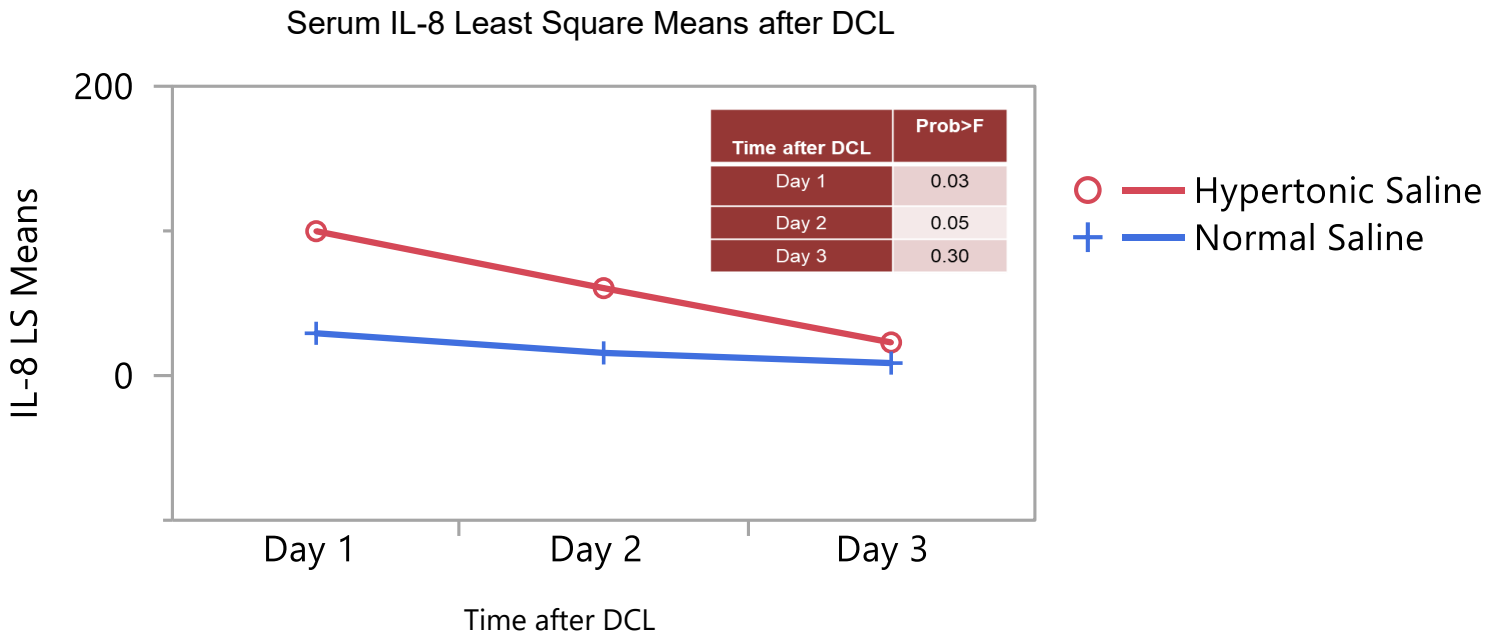
Trauma patients 18 years old or greater requiring a DCL were randomized to receive a standard rate of 3% HTS or 0.9% Normal Saline Solution (NSS) in this double blinded prospective trial. Demographics, laboratory values, IL6 and IL8 levels were compared. Statistical analysis was performed using JMP 13 (SAS, Cary, NC). Fisher's exact test, Mann-Whitney U-test, or Student's t-test using as appropriate. Statistical significance was set at $p<0.05$.

70 patients met inclusion criteria of which 62 completed the protocol. The HTS and NSS groups were similar in age, sex, and body mass index ($p>0.05$). Groups had similar injury severity score (ISS), initial Glasgow Coma Scale (GCS), maximum Abbreviated Injury Score (AIS), Trauma Injury Severity Score (TRISS), and Revised Trauma Score (RTS). There were more penetrating traumas in the NSS cohort (64% vs. 36%), but no difference in organ laceration, orthopedic injuries, abdominal trauma, or significant vascular injuries. Mean base deficit and lactate were not significantly different ($p>0.05$). The geometric means of IL6 and of IL8 concentrations were significantly higher in the HTS group compared to the NSS group in the first 72 hours ($p=0.033$, $p=0.047$, respectively).

This is the largest known human study to date investigating impact of HTS resuscitation in trauma on inflammatory cytokines. Our results found an increase in inflammatory markers with the HTS cohort that does not support previously published studies. This analysis is part of a larger multicenter trial investigating infection rates and organ dysfunction and may necessitate larger studies investigating the effects of inflammatory cytokine levels on trauma patient outcomes.

Disclaimer: The views expressed are those of the [author(s)] [presenter(s)] and do not reflect the official views or policy of the Department of Defense or its Components. The voluntary, fully informed consent of the subjects used in this research was obtained as required by 32 CFR 219 and DODI 3216.02_AFI 40-402.


Serum IL-6 Least Square Means after DCL
200
0
IL-6 LS Means
Time after DCL
Prob>F
Day 1
0.02
Day 2
0.05
Day 3
0.22
Day 1
Day 2
Day 3
Time after DCL
Hypertonic Saline
Normal Saline


Serum IL-8 Least Square Means after DCL
200
0
IL-8 LS Means
Time after DCL
Prob>F
Day 1
0.03
Day 2
0.05
Day 3
0.30
Day 1
Day 2
Day 3
Time after DCL
Hypertonic Saline
Normal Saline