



Hyperbaric Exposure Immediately After Burn Injury Intensifies Systemic and Intestinal Inflammation

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BACKGROUND

- Rapid aero-medical evacuation is common in the treatment of severely injured soldiers
- The effect of early hypobaric exposure on the inflammatory response to burn injury is unknown
- KC is a chemokine that appears to play an important role in the pathogenesis of the systemic inflammatory response to injury
- We hypothesized that acute hypobaric exposure exacerbates the inflammatory response to injury

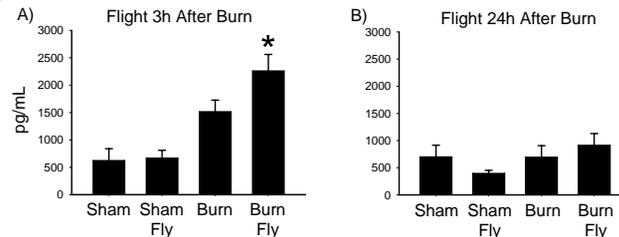
METHODS

- Mice were exposed to a 25% TBSA scald or sham burn
- 3 or 24 hours after injury, mice were placed in hypobaric conditions simulating an altitude of 8800 feet for 5 hours or maintained at ground level
- Mice were sacrificed one hour after simulated flight and serum & intestinal cytokines analyzed by ELISA

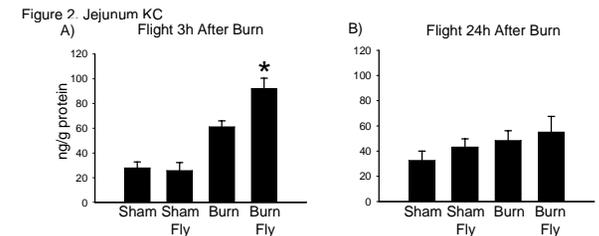
RESULTS

- Data is expressed as mean \pm SEM. ANOVA followed by post hoc testing used to compare groups
- Sham injured mice did not demonstrate increased serum or jejunum KC levels after flight alone at 3 or 24h after sham burn (Figures 1 and 2)
- Mice exposed to flight conditions 3h after burn had significantly elevated serum cytokine KC levels compared to burn injured mice kept at ground level ($p < 0.05$ vs. other groups, Figure 1A)
- In contrast, injured mice allowed to recover 24h before simulated flight showed no significant increase in serum KC levels compared to other groups (Figure 1B)

Figure 1. Serum KC



- Similar results were seen in jejunum, where burn injury followed by simulated flight at 3 hours (Figure 2A) but not 24 hours (Figure 2B) post-burn resulted in significantly increased jejunum KC levels over burn injury alone ($p = 0.002$)



CONCLUSIONS

- Hypobaric exposure after burn injury may worsen the inflammatory response
- From the standpoint of the inflammatory response to injury, there may be an optimal waiting period prior to the aero-medical evacuation of burn patients

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