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Title: Evidence of bacteremia and endotoxemia in mice undergoing hyperbaric stress

Authors: Gillmore, JD
Walker, RI

Keywords: animal
mice
bacteremia
endotoxemia
Endotoxins
microbiology

Issue Date: 1977

Citation: Undersea Biomed Res. 1977 Mar;4(1):67-73.

Abstract: Swiss albino mice were exposed to normoxic (PO₂ approximately 0.2 ATA) helium at 1, 20 or 35 ATA for 2 or 48 h and examined for the presence of bacteria and endotoxin in selected tissues. Among mice exposed to 35 ATA for 48 h and tested immediately after decompression for bacteria in liver and peritoneal cavities, 6 of 30 (20percent) contained gram-negative rods and 27 of 30 (90percent) contained gram-positive cocci. Incidence of infection was considerably less in mice exposed to 35 ATA for 2 h or exposed to 1 ATA. Evidence of presence of gram-negative rods and /or escape of free endotoxin from the intestine was provided by demonstration that limulus lysate is coagulated (presumptive evidence of endotoxin) by liver homogenates in 70percent of the mice exposed to 35 ATA for 48 h, 68percent of those exposed to 20 ATA and 14percent of those exposed to 1 ATA. Mice subjected to the hyperbaric stress of 35 ATA for 48 h were shown to be increasingly susceptible to injection with purified lipopolysaccharide. The LD₅₀ was 0.24 mg for hyperbaric exposed mice and 0.39 mg for the control groups. These data suggest that hyperbaric stress, but not necessarily decompression, results in a short-term presence in mouse tissues of microbial agents originating from the gut. This invasion temporarily renders that host more susceptible to additional endotoxic challenge. Animals *Atmospheric Pressure

Endotoxins/analysis/*blood/toxicity Female Lethal
Dose 50 Lipopolysaccharides/toxicity
Liver/analysis/microbiology Mice Peritoneal
Cavity/microbiology
Septicemia/*etiology/microbiology Support, U.S.
Gov't, Non-P.H.S. Time Factors

Description: Undersea and Hyperbaric Medical Society, Inc.
(<http://www.uhms.org>)

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