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Title: Blood-brain and blood-lung barrier alteration by dysbaric exposure

Authors: Chryssanthou, C
Springer, M
Lipschitz, S

Keywords: decompression

Issue Date: 1977

Abstract: Failure of certain circulating substances to penetrate specific organs led to the concept of blood-organ barriers. Such barriers can be altered by various physical or chemical means. This report concerns modification of the blood-brain barrier (BBB) and blood-lung barrier (BLB) by dysbaric exposure. Trypan blue was intravenously administered to 19 experimental rabbits (subjected to compression-decompression) and to 11 controls (kept at ambient pressure). Gross and microscopic examination and measurements of dye extracted from tissues revealed greater dye penetration into lung and brain of the experimental animals. Dye concentration in brain was 12.10 microgram/g tissue in experimental and 2.93 microgram in control animals; in lungs it was 935 microgram and 434 microgram, respectively (0.01 greater than P 0.001). Increased permeability of BBB and BLB was associated with intravascular bubbles. The mechanism of BBB and BLB alteration may involve chemical agents activated by gas-blood interface or vascular injury produced by bubbles. These observations could have pathogenetic implications in decompression sickness and may suggest new methods for facilitating penetration of therapeutic agents into the brain. Animals *Atmospheric Pressure *Blood-Brain Barrier Brain Chemistry Capillary Permeability Decompression Sickness/physiopathology Female Lung/analysis/physiopathology Permeability *Pulmonary Diffusing Capacity Rabbits Support, U.S. Gov't, Non-P.H.S. Trypan Blue/analysis

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

URI: [PMID: 878067](http://pubmed.ncbi.nlm.nih.gov/878067/)

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