Mechanisms of Injury

Prolonged Hypobaria during Aeromedical Evacuation and the Effects on TBI

The University of Cincinnati Medical Center, with sponsorship from the Air Force Medical Service Support Agency and OAFSG, conducted a study of prolonged hypobaria exposure during aeromedical evacuation to determine the long-term effects of prolonged hypobaria on contusion- and explosion-induced TBI. Using a validated TBI rat model, animals were subjected to prolonged hypobaria at different time periods after induced TBI and outcomes were measured via histological, neurochemical, and behavioral assessments. Rats exposed to six hours of hypobaria at elevations above 8000 ft. of altitude, at six, 24, or 72 hours after either a mild or moderate TBI had worse neurological or neuropathological outcomes than rats that were not exposed to hypobaria. These findings have important implications for operational treatment procedures during aeromedical evacuation. Future studies may investigate how and why hypobaria may worsen outcomes during aeromedical evacuation following TBI combined with hemorrhagic shock.