Neurobehavioral and Psychological Health Outcomes

Blast-induced Mild Traumatic Brain Injury (mTBI) and Possible Association with Posttraumatic Stress Disorder (PTSD)

Due to the high prevalence of TBI and PTSD in military populations, work at the Naval Medical Research Center (NMRC) has focused on understanding the role of blast-induced mTBI in the development of PTSD. Specifically, changes in anxiety behavior, stress response, and a specific fear-related brain protein, stathmin, have been identified in a rat model of blast-induced mTBI. Stathmin, a protein that has been correlated with states of both innate and learned fear, was elevated in the amygdala of blast-exposed rats.[1] Such findings suggest that blast-related mTBI may contribute to the development of PTSD. Current work refines the behavioral changes seen following blast-related mTBI and utilizes a stathmin knock-out mouse model to further explore the role of stathmin in the development of PTSD. Additional work examines changes in the hypothalamic/pituitary/adrenal axis following mTBI and may lead to a better understanding of the anatomic basis for the PTSD-related traits observed following blast exposure. The findings from this research will aid in evaluating comorbidity of TBI and PTSD.

1 Elder, G. A., Dorr, N. P., De Gasperi, R., Gama Sosa, M. A., Shaughness, M. C., Maudlin-Jeronimo, E., … Ahlers, S.T. (2012). Blast exposure induces post-traumatic stress disorder-related traits in a rat model of mild traumatic brain injury. Journal of Neurotrauma, 29(16), 2564–2575. https://doi.org/10.1089/neu.2012.2510