

# **TRANSLATING BLAST-RELATED ANIMAL RESEARCH INTO CLINICAL CARE**

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## **ABSTRACT**

High-pressure blast waves can cause extensive CNS injury in humans. However lower level exposures associated with mild traumatic brain injury (mTBI) have been much more common in the most recent conflicts in Iraq and Afghanistan. Blast-related mTBI has been frequently associated with chronic persistent symptoms. Yet controversy exists concerning whether these symptoms are caused by the effects of blast or are better explained by post-traumatic stress disorder (PTSD). Animal models should allow the effects of blast to be determined free from many of the confounding variables present in natural human exposures. However, interpreting the experimental blast literature is complicated by variations in the models being studied. It is further complicated by the problem of how to apply definitions of human mTBI to animal models. Despite these limitations animal studies have shown that low-level blast exposures cause a variety of behavioral, biochemical, pathological and physiological effects on the nervous system including the induction of PTSD-related behavioral traits in the absence of a psychological stressor. Observations in animals also suggest that blast-related TBI is pathophysiologically distinct from non-blast TBI. Translating findings from animal studies into clinical care remains a challenge.