



US DEPARTMENT OF DEFENSE

# BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

## Diagnostics

### Diffusion Tensor Imaging Reveals Acute Subcortical Changes After Mild Blast-induced TBI

Diagnosing mild blast-induced TBI poses special challenges due to overlapping symptomatology with other neuropsychiatric conditions and the lack of objective outcome measures. CNRM at USUHS is sponsoring and conducting preclinical research on rat models to investigate the potential of DTI to provide a clinically relevant differential diagnosis of mild blast-induced TBI. While no significant blast-related effects could be detected in brains fixed at 42 days after exposure to mild blast overpressures, significant blast-related effects were detected for several subcortical structures using samples fixed two hours after exposure. Significant differences between singly- and multiply-injured rats were identified in the thalamus, but not the hippocampus. These findings provide valuable information about the capabilities and limitations of DTI as tool to better understand the pathobiology associated with mild blast exposure.