Neurocognitive and Psychological Health Outcomes

Chronic Effects of Neurotrauma Consortium 2: Long Term Follow Up of Service Members with Traumatic Brain Injury Reveal Sustained and Worsening Outcomes

Researchers at the University of Washington (Seattle, Washington), completed a study under the Chronic Effects of Neurotrauma Consortium (CENC) that leverages funding across multiple federal agencies. The original studies, led by researchers at Washington University (Saint Louis, Missouri), characterized Service members with traumatic brain injury (TBI) from combat environments. These FY07 and FY09 efforts were notable in that participants received comprehensive clinical, neuropsychological, and neuroimaging assessments within hours to days of clinically confirmed brain injury and follow up assessments up to one-year post injury. Under the CENC funding, researchers at the University of Washington were able to follow up with 94 of the original 500 subject cohort, which included combat-deployed controls without brain injury. In some cases, follow up is occurring nearly a decade after the original injury. Advanced neuroimaging in the subjects followed under CENC show reduced fractional anisotropy in the white matter of injured participants five years post injury (*Mac Donald, Barber, Andre, et al. 2017*). Reduced fractional anisotropy correlates to white matter damage and in some cases, reductions in cognitive performance. The continued reduction in fractional anisotropy in these subjects may be a method to identify neurodegeneration in chronic TBI. The researchers' efforts also reveal sustained decrements, which in some cases worsen, in global disability, neurobehavioral, and psychiatric outcomes for individuals with TBI (*Dams-O'Connor and Tsao 2017, Mac Donald, Barber, Jordan, et al. 2017, Mac Donald, Johnson, et al. 2017*; Figure 1). These individuals represent a population of injured Service members with sequelae consistent with chronic TBI. The researchers continue to follow up another 200 subjects via funding received from the National Institutes of Health.

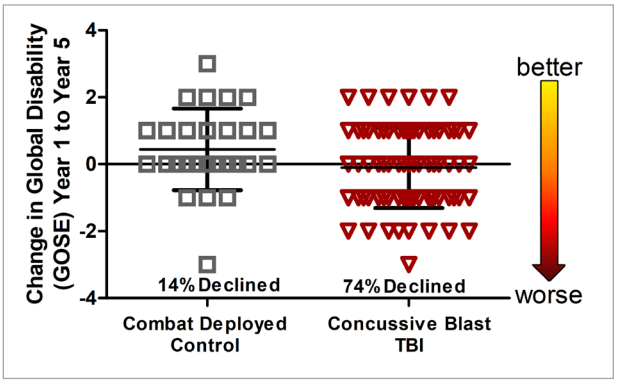

FIGURE 1: Global Outcome. GOSE (Figure used with permission from the authors)

Comprehensive characterization (onset, prevalence, and severity) of chronic TBI in Service members and Veterans is needed to understand and treat long-term effects of TBI and co-morbid conditions.

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