

Comparison of Clinical Outcomes 1 and 5 Years Post-Injury Following Combat Concussion

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Cite as: *Neurology*® 2021;96:e387-e398. doi:10.1212/WNL.0000000000011089

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Study Question

How do clinical syndromes and symptoms evolve over time in patients combat-related concussion?

What Is Known and What this Paper Adds

Patients with combat-related concussion experience neuroimaging changes over 5 years following traumatic brain injury (TBI). This investigation's results show that these same patients experience an evolution, not a resolution, of clinical symptoms over the 1–5 years post-injury.

Methods

For this prospective cohort study, the investigators followed US military personnel deployed to combat in Iraq and Afghanistan between 2008 and 2013 and categorized them into 4 groups: “non-blast controls” without a history of blast exposure (n = 109), a “non-blast TBI” group who experienced combat-related concussions unrelated to blasts (n = 28), “blast controls” with histories of sub-concussive blast exposure (n = 41), and a “blast TBI” group who experienced concussive blast (n = 170). At 1- and 5-year evaluation, patients completed identical test batteries that examined neurobehavioral, psychiatric, and cognitive outcomes. The investigators used a rank regression model for cross-sectional and longitudinal analyses of between-group differences in clinical outcomes.

Results and Study Limitations

Cross-sectional analyses of 5-year outcomes data showed that both TBI groups experienced worsened symptoms relative to their respective control groups on tests of neurobehavioral

Table Percentages of Patients Experiencing Worsening of Neurobehavioral and Psychiatric Symptoms in the Concussion and Control Groups

Group	Percentages of patients experiencing clinically meaningful decline 1 to 5 years post-injury	
	Neurob. symptoms	Psychiatric symptoms
Concussion groups	66%–76%	41%–54%
Control groups	37%–50%	9%–25%

Abbreviation: Neurob. = Neurobehavioral.

(Cohen's d , -1.10 to -1.40) and psychiatric (Cohen's d , -0.91 to -1.19) symptoms but not on tests of cognition. Worsening of neurobehavioral and psychiatric symptoms between the 1- and 5-year timepoints was more common in the concussion groups than in the control groups. The present study's limitations include the small sizes of the non-blast TBI and blast control groups, the heterogeneity of centers at which the participants received care, and the lack of comprehensive preinjury clinical data.

Study Funding and Competing Interests

This study was funded by the NIH. Some authors report consulting for healthcare companies and educational institutions, serving on committees for healthcare companies, and receiving funding from agencies of the US Federal government. Go to Neurology.org/Nfor full disclosures.

A draft of the short-form article was written by M. Dalefield, a writer with Editage, a division of Cactus Communications. The corresponding author(s) of the full-length article and the journal editors edited and approved the final version.

Neurology[®]

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Neurology 2021;96:e387-e398 Published Online before print November 11, 2020

DOI 10.1212/WNL.0000000000011089

This information is current as of November 11, 2020

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