Neurocognitive evaluation of mild traumatic brain injury in the hospitalized pediatric population.

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Source

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Abstract

OBJECTIVE:

To test the feasibility of inpatient neurocognitive testing and measure the degree of disability in children hospitalized with mild traumatic brain injury (MTBI).

SUMMARY BACKGROUND DATA:

MTBI is common in the pediatric population. A standardized approach to identify neurocognitive impairment and determine optimal time to return to exertional activities (eg, school, sports) is lacking.

METHODS:

For a 2-year period, children (age: 11-17 years) hospitalized at a level 1 urban Pediatric Trauma Center with MTBI were prospectively enrolled. Neurocognitive performance was assessed utilizing previously validated computer-based tests (Immediate Postconcussion Assessment and Cognitive Testing) as inpatient and in follow-up clinic after discharge. The feasibility of inpatient testing and the degree neurocognitive impairment and symptomatology were assessed. This study was approved by the IRB and registered with clinicaltrials.gov (NCT00715949).

RESULTS:

For the 2 years of study, 116 subjects were prospectively enrolled and tested. The population had a mean age of 14 years and 69.8% were male. On initial in-hospital testing, the overall population demonstrated considerable neurocognitive deficits (mean values for all 4 subtests below 25th percentile, norm 50%) with at least one subtest score below 25% in 95.7% and an abnormal symptom score in 83.4% of patients. In comparing initial testing to follow-up testing (N = 63), significant improvements were noted for all subtests (verbal memory: 28.0% vs. 37.5%, respectively, norm 50%, P = 0.02; visual memory: 24.9% vs. 38.1%, respectively, norm 50%, P < 0.01; visual motor: 21.8% vs. 31.1%, respectively, norm 50%, P = 0.01; reaction time:...
21.8% vs. 30.3%, respectively, norm 50%, P = 0.05), with a decline in the symptom score (26.9 vs. 9.2, respectively, norm 0-8, P < 0.01) as well. Patients not seen in follow-up (N = 53) did not differ demographically from those seen in clinic.

CONCLUSIONS:

Inpatient neurocognitive testing was feasible in pediatric MTBI patients. Neurocognitive abnormalities were nearly universally present on initial evaluation with significant improvements demonstrated at the time of outpatient follow-up. Return to activity recommendations are thus best deferred for most hospitalized MTBI children until formal assessment can be performed after discharge.