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Behavior Problems 7 Years After Childhood Severe Traumatic Brain Injury: Results of the Traumatisme Grave de l'Enfant (TGE) Study

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Introduction

The aim of this study was to investigate the occurrence of long-term behavioral problems 7 years after severe pediatric traumatic brain injury (TBI) and their evolution over time at 3 months, 1, 2, and 7 years postinjury.

Methods

This study was drawn from the 7-year follow-up of patients included in the Traumatisme Grave de l'Enfant (TGE) longitudinal cohort: 34 participants (38% girls; age at injury: mean = 7.6, SD = 4.7 years; age at assessment: mean = 15, SD = 4.6 years) underwent comprehensive assessment 7 years after severe childhood TBI (Glasgow Coma Scale [GCS] score ≤ 8 upon admission and/or an Injury Severity Score [ISS] > 16). The TGE study included a control group matched by age, gender, and parental education to participants with TBI at the 7-year follow-up. A subgroup of 20 participants with TBI had available behavioral assessment at 3 months, 1, and 2 years postinjury. We assessed behavioral problems with age-appropriate self- and parent reports of the Achenbach's Behavioral Checklist, which allowed examining 8 syndrome scales of behavioral problems together with 3 composite measures of Internalizing, Externalizing, and Total problems. Additional data included sociodemographic background (gender, parental educational level), initial injury severity (GCS, ISS, length of coma), and specific outcomes assessed 7 years postinjury (Glasgow Outcome Scale, ongoing education, intellectual functioning, executive functions, participation, quality of life, fatigue, and family functioning).

Results

When compared with the control group, self- and parent-reported behavioral problems were significantly higher in participants with TBI for aggressive behavior and thought problems, with a significant proportion (42% and 36%) above the clinical cutoff for externalizing problems. Participants with TBI reported more behavioral difficulties than controls for withdrawn/depressed, somatic complaints, and intrusive behavior, while parents reported significant difficulties on rule-breaking behavior, attention and social problems. There was a tendency of parent-reported behavioral problems to increase over time between 3 months and 7 years postinjury for externalizing (from the 8 participants above the clinical cutoff 7 years postinjury, 5 participants were below the cutoff 3 months postinjury) and total problems (5/10 participants). Greater initial injury severity (longer length of coma and higher ISS) was associated with increased rates of parent-reported externalizing problems

Conclusions

The present findings underline the association between initial injury severity and the significantly large occurrence of behavioral problems several years postinjury. Our results highlight the importance of long-term follow-up and individualized interventions for children who had severe TBI, since they are at risk for exhibiting externalizing behavioral problems together with a range of cognitive and psychosocial difficulties, including greater overall disability, lower intellectual ability, participation and quality of life, increased sense of subjective fatigue, and poorer family functioning in the long term.