Misdiagnosis of post-traumatic stress disorder following severe traumatic brain injury

RUTH E. SUMPTER and TOM M. McMILLAN

Background The incidence of post-traumatic stress disorder (PTSD) after traumatic brain injury is unclear. One issue involves the validity of diagnosis using self-report questionnaires.

Aims To compare PTSD ‘caseness’ arising from questionnaire self-report and structured interview.

Method Participants (n=34) with traumatic brain injury were recruited. Screening measures and self-report questionnaires were administered, followed by the structured interview.

Results Using questionnaires, 59% fulfilled criteria for PTSD on the Post-traumatic Diagnostic Scale and 44% on the Impact of Events Scale, whereas using structured interview (Clinician-Administered PTSD Scale) only 3% were ‘cases’. This discrepancy may arise from confusions between effects of PTSD and traumatic brain injury.

Conclusions After traumatic brain injury, PTSD self-report measures might be used for screening but not diagnosis.

Declaration of Interest None.

There is growing acceptance that post-traumatic stress disorder (PTSD) can occur after traumatic brain injury (McMillan et al, 2003), but the reported incidence varies widely (0–56%), making service planning difficult. Such variability may arise because of methodological difficulties (Bryant, 2001), but in addition, the effects of traumatic brain injury might lead to inaccurate reporting or interpretation of responses. For example, people with traumatic brain injury can focus on the memory gap resulting from coma and post-traumatic amnesia without great distress and this might be inappropriately labelled as ‘intrusive’; they may avoid tasks and situations because of incapacity rather than fear; and often their lives have been significantly altered by traumatic brain injury (McMillan, 2001). Personality change, including impulsiveness, reduced insight, rigid thinking, reduced motivation, and impaired learning and concentration resulting from traumatic brain injury, may also cause some complaints to be mislabelled as PTSD symptoms. McMillan (2001) reported a severe case of traumatic brain injury that appeared to have PTSD on the basis of the Post-traumatic Diagnostic Scale (PDS), but clearly did not at clinical interview. The present study examines McMillan’s finding in a group of severe cases of traumatic brain injury.

METHOD

Permission was obtained from the local research ethics committee.

Participants A total of 34 participants were recruited from community out-patient and rehabilitation services, and voluntary organisations. A power calculation based on proportions of people with severe traumatic brain injury reaching PTSD ‘caseness’ on the Impact of Events Scale (IES) and Clinician-Administered PTSD Scale (CAPS) (Turnbull et al, 2001) indicated n=30, needed for 80% power, with $\alpha$ set at 0.05 and $\beta$ at 0.2. Participants were >17 years, with a severe traumatic brain injury (post-traumatic amnesia >1 day) at least 3 months before interview. Exclusion criteria were scores <27 on the Mini-Mental State Examination (Folstein et al, 1975), severe dysphasia or dyslexia, or current treatment for psychosis.

Measures

PTSD (i) IES, a 15-item self-report questionnaire, providing ratings of avoidance and intrusion (Horowitz et al, 1979). Total IES scores >25 determined ‘caseness’ (Corneil et al, 1999).

(ii) PDS, a 49-item self-report questionnaire based on the 17 DSM–IV (American Psychiatric Association, 1994) symptoms, with ratings of duration, onset and impact on social and occupational functioning (Foa et al, 1997). PTSD ‘caseness’ is defined here as fulfilment of criteria B–F. For all definitions, criterion A need not be met in a population with severe traumatic brain injury given the co-occurrence of loss of consciousness and post-traumatic amnesia.

(iii) CAPS, a structured clinical interview assessing the 17 DSM–IV symptoms, their duration and impact. A symptom is ‘present’ when the frequency is >0 and intensity >1 (Blake et al, 1995). Two definitions of caseness were used to consider difficulties that might arise if CAPS is administered by an unsupervised and inexperienced clinician:

(a) CAPS—without judgement requires DSM–IV criteria B–F to be fulfilled.

(b) CAPS—with clinical judgement in addition requires the clinician to adjudge that the symptoms are related to the trauma.

Other

(i) The Hospital Anxiety and Depression Scale (HADS) has two sub-scales (anxiety and depression); scores >7 were rated abnormal (Zigmond & Snaith, 1983).

(ii) The Rivermead Post Concussion Symptoms Questionnaire (RPQ) is a 14-item self-report questionnaire (King et al, 1995).
RESULTS

Demographic and descriptive measures

Thirty male and four female participants were recruited from community services. The average age at interview was 40 years (s.d.=11, range 20–60 years) and years of education 12 (s.d.=2, range 10–20). Average premorbid intelligence quotient (IQ) (National Adult Reading Test (NART)) was 100 (s.d.=14, range 69–121) and time since injury 6 years (s.d.=7, range 0.6–34). Average duration of post-traumatic amnesia was 11 weeks (s.d.=13 weeks, range 26 h to 52 weeks). Cause of injury was road traffic accident (16), fall (11), assault (6) or sports accident (1). Compensation claims or legal proceedings were ongoing in 12 cases. GOS-E scores ranged from lower-severe to upper-moderate disability, with 53% in the lower-moderate category. RPQ scores ranged from 3 to 60 (mean=30, s.d.=14). Average SCT scaled scores were <25th percentile (Baddeley et al, 1992), (mean=6, s.d.=2.7, range 1–12).

Diagnostic measures (Table I)

More ‘cases’ were found on the PDS (McNemar’s $\chi^2=12.07, P<0.01$) and IES ($\chi^2=4.27, P<0.05$) than on CAPS–without clinical judgement. Only one participant (3%) was diagnosed with PTSD using CAPS–without clinical judgement. Of 20 ‘cases’ identified by questionnaires, 19 were false positives, as were 5 out of 6 ‘cases’ identified using CAPS–without clinical judgement. No false negatives were found. Either questionnaire identified more false positive ‘cases’ than CAPS–without clinical judgement (McNemar’s $\chi^2=4.32, P<0.05$).

No significant differences were found between PTSD ‘cases’ and ‘non-cases’ on questionnaire measures (PDS or IES) or CAPS–without clinical judgement, for age at interview (PDS or IES, $U=105.5$, $P<0.78$; CAPS, $U=58.5, P<0.25$), age at injury ($U=101.5, P<0.67$; $U=52.0$, $P<0.15$), time since injury ($U=112, P<0.63$; $U=68, P<0.47$), years of education ($U=105, P<0.63$; $U=83.5$, $P<0.98$), duration of post-traumatic amnesia ($U=100.5, P<0.64$; $U=55$, $P<0.19$), or premorbid IQ ($U=104.5, P<0.76$; $U=80$, $P<0.88$). No significant differences were found between those pursuing litigation and those not, in terms of PDS symptom severity score ($U=123, P<0.76$), IES total score ($U=99.5, P<0.24$), or CAPS total score ($U=117.5, P<0.60$).

DISCUSSION

People with severe traumatic brain injury met PTSD criteria for ‘caseness’ more often using self-report questionnaires than structured interview. Significantly more (false positive) ‘cases’ were identified using questionnaires, even compared with interview without clinical judgement guiding the relevance of responses to trauma. ‘Cases’ were not identified at interview that were not also identified by questionnaire, supporting the use of questionnaires as screening tools, perhaps tentatively given that only one participant was diagnosed with PTSD at
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REFERENCES


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