Incidence of Chronic Pain Following Traumatic Brain Injury

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Objective: To index the frequency of reported chronic pain in patients with traumatic brain injury (TBI).

Design: A case series study was conducted on consecutive patients with TBI.

Setting: TBI patients were recruited from an adult tertiary care center brain injury clinic.

Patients: A consecutive sample of 132 patients who attended a brain injury rehabilitation center after TBI. The sample included 53 mild and 79 moderate/severe TBI patients.

Outcome Measures: Patients were administered a protocol that indexed pain site, frequency, severity, and duration.

Results: Chronic pain was reported by 58% of mild TBI and 52% of moderate/severe TBI patients. Headaches were the most commonly reported pain problem. Chronic headaches were reported by 47% of mild TBI patients and 34% of moderate/severe TBI patients. Neck/shoulder, back, upper limb, and lower limb pain were reported similarly by mild and moderate/severe TBI patients.

Conclusions: Findings indicate that chronic pain is a significant problem in mild and moderate/severe TBI patients. More effective diagnosis of TBI patients with chronic pain may facilitate rehabilitation of these patients.

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Events that cause traumatic brain injury (TBI) often result in various physical injuries. These injuries can result in a range of conditions typically associated with pain. The coexistence of chronic pain and TBI would appear to represent a significant problem because chronic pain compounds cognitive deficits compromises emotional well-being, and limits functional capacity. These impairments are often present in TBI patients and are potential obstacles to effective rehabilitation. There has been little structured research, however, on the prevalence of chronic pain in TBI patients. In one recent study, it was reported that whereas chronic pain was common in mild head injured patients (95%), it was uncommon in moderate/severe head injured patients (22%). Headaches accounted for a significant proportion of reported pain in the mild (89%) and moderate/severe (18%) head injured patients. Other studies have indicated the prevalence of headaches in the postconcussive syndrome; however, the reported incidence of headaches varies between 18% and 79%.

The methodologies employed in previous studies of chronic pain in TBI populations may not accurately index its prevalence. The studies have typically indexed incidence by retrospective study of medical records. This method relies, however, on accurate and thorough self-reports of pain given during medical interviews that may not specifically address chronic pain. TBI is associated with poor self-monitoring and lack of insight. The reported low prevalence of chronic pain associated with moderate/severe head injury may be possibly attributed to these patients' inadequate self-monitoring. While brain injury can be obscured by chronic pain, it is also feasible that head injury may impede the identification of pain. Evidence for this possibility are findings that some brain injured patients suffer undiagnosed reflex sympathetic dystrophy and that their cognitive deficits impede reporting of their pain. This possibility is heightened by findings that memory for pain is susceptible to distortion, and that TBI is characterized by memory deficits.

Our aim in this study was to index the incidence of chronic pain in patients who had sustained mild and moderate/severe TBI. We attempted to employ a more comprehensive measurement of pain that would be less susceptible to potential deficits in self-monitoring. On the premise that many patients sustain diverse injuries in association with TBI, we expected that both mild and moderate/severe TBI patients would report significant levels of chronic pain.

METHOD

Patients. All patients were recruited from a brain injury clinic for adults referred for evaluation by neurologists, physicians, or rehabilitation agencies. At the clinic, a rehabilitation specialist reviewed the patients' TBI; the reviews often included implementation of multidisciplinary evaluation and/or treatment by physiotherapists, speech therapists, occupational therapists, rehabilitation counsellors, or social workers. Exclusion criteria for this study included (1) absence of documented TBI, (2) chronic pain prior to the TBI, (3) inability to comprehend and complete the protocol, and (4) ages younger than 18 years or older than 60 years. Eight patients were excluded from the study on the basis of these criteria. The 132 successive patients who were investigated over an 8-month period included 104 men and 28 women.

Traumatic brain injury severity. To allow for comparison between previous reports of chronic pain in TBI populations, we adopted the same classification of head injury severity used in a previous study. Specifically, severity of head injury was based on (1) Glasgow Coma Scale (GCS) score or (2) loss of consciousness. Mild TBI was defined as (1) documented loss of consciousness at time of trauma, (2) loss of consciousness of less than 1 hour, and (3) initial GCS score of 13 to 15. Consistent with previous reports, moderate and severe TBI patients were combined into a single category. Analyses indicated no differences in pain reporting between moderate and severe TBI patients. Moderate/severe TBI was defined as GCS score of 12 and below. The sample consisted of 53 mild and 79 severe TBI patients. In terms of mechanism of injury, 73% sustained their...
pain on a daily basis. The 2 patient groups did not differ in their rated severity.

Overall, 58% of mild TBI patients reported chronic pain that had been experienced for at least 6 months. The increased incidence of chronic pain may significantly compound TBI patients' difficulties in rehabilitation in many ways. Deficits in attention and memory that are associated with TBI may be worsened by the presence of chronic pain. Depression and anxiety commonly experienced by TBI patients may also be compounded by persistent pain. Finally, functional limitations, especially in moderate/severe TBI patients, may be increased by limited mobility associated with chronic pain. These factors suggest that rehabilitation agencies that serve TBI patients must be particularly aware of the needs of TBI patients with chronic pain. Previous studies have noted the importance of psychosocial factors in mediating effective rehabilitation after TBI. It is possible that inadequate pain management may compound the psychosocial stress that TBI patients experience and that rehabilitation efficacy may be consequently impeded.

Diagnostic procedures may need to be refined to detect pain and its extent in TBI patients. It is common for patients presenting at brain injury clinics to report the symptoms associated with brain injury. These patients may not report pain, however, because (1) it is not perceived as the primary reason for attending the clinic and (2) their cognitive impairment may impede insight into the role that pain plays in their functional and emotional disturbance. The possibility that cognitive impairment may impede pain reporting is consistent with findings that severe headaches are reported less often by head injured patients.
The high incidence of pain reporting in our study suggests that assessment methods that directly target chronic pain may result in more accurate identification of that pain after TBI. Our study has some methodological limitations. First, the mild and moderate/severe TBI patients were not matched in terms of duration of pain. It could be argued that this factor differentially influenced pain reporting. Second, TBI patients' reports of pain may have been influenced by memory deficits that contribute to inaccurate recall of pain frequency and severity. Future studies could index TBI patients' chronic pain through daily records of pain levels. Third, it is possible that the practice of directing patients to report pain may have cued them to focus on painful sensations in a way that they normally would not do. This procedure may have resulted in elevated levels of pain reporting. Fourth, the study of TBI patients who were referred to a brain injury clinic may not have resulted in findings that are generalizable to all TBI patients. These limitations notwithstanding, this study indicates that further research is needed to more effectively diagnose chronic pain in TBI patients. Effective rehabilitation in many TBI patients may be facilitated by more comprehensive identification and management of chronic pain.

References