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Self-Reported Clinical Correlates of Insomnia

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Abstract

Objective: *to examine clinical correlates of post-accident insomnia.*

Background and Aims: *survivors of motor vehicle accidents (MVAs) usually report impaired sleep and other symptoms such as persistent pain, depressive symptoms, anxiety, anger, and post-MVA neurological symptoms. We examined how these variables correlate with insomnia.*

Materials and Methods: *101 patients (mean age 42.6, SD=14.1, 39 males, 62 females) undergoing psychological assessment after an MVA completed the Insomnia Severity Index, the Rivermead Post-Concussion Symptoms Questionnaire, and the Brief Pain Inventory. We also assessed post-MVA neurological symptoms other than concussion (e.g., hand tremor, tingling, numbness, impaired muscular control over limbs), the current mood (anxiety, depression, anger). We also interviewed our patients about the immediate symptoms of concussion (loss of consciousness, or feeling dazed, stunned, confused, disoriented, or dizzy).*

Results: *The Insomnia Severity Index (ISI) in our sample ranged from 2 to 28 (mean 22.3, SD=5.3). The psychometric properties of ISI in our sample are satisfactory (Cronbach's alpha=.88). The insomnia scores correlated moderately with depressive mood (r=.64) and also with the post-concussion syndrome even after the item dealing with impaired sleep was removed from the Rivermead (r=.66). The insomnia also correlated with measures of MVA related pain (r=.41), anxiety (r=.48), and anger (r=.39), post-MVA neurological symptoms other than concussion (r=.36), and with diagnosis of PTSD (r=.50), but not with age and gender (p>.05).*

Conclusions: *The post-MVA insomnia (as represented by ISI scores) is moderately correlated with the post-concussion syndrome and with depressed mood.*

Keywords: *insomnia, pain, concussion, post-concussion syndrome, Rivermead scale*

Introduction

The sleep impairment is reported by most survivors of motor vehicle accidents (MVAs). The causative factors may include persistent pain, mood symptoms, PTSD, and various other factors such as the immediate concussions signs or the lingering post-concussion syndrome, or some other post-MVA neurological issues.The recent Handbook of Clinical Neurology lists sleep disruption as a part of the postconcussion syndrome [1]. Our study examined statistical correlates of post-MVA insomnia.

Materials and Methods

Our sample included 101 patients applying for compensation with their car insurer after an MVA (mean age 42.6, SD=14.1, 39 males, 62 females). The majority (65.3%) had no previous serious MVAs associated with injuries. One previous serious MVA was reported by 31.7% and more than one by only 3 persons.

The number of weeks since the MVA ranged from 4 to 142 (mean = 52.5, SD=31.2).

The patients completed the Insomnia Severity Index [2], Brief Pain Inventory [3], the Rivermead Post-Concussion Symptoms Questionnaire [4], and Items 10 to 12 of the Whiplash Disability Questionnaire [5].

We also administered 8 items assessing neurological symptoms of the whiplash spectrum: (1) hand tremor,

(2) reduced muscular control over leg, (3) reduced muscular control over arm or hand, (4) tingling, (5) numbness, or (6) reduced tactile sensitivity in the limbs, (7) reduced bladder control, (8) reduced bowel control. These 8 items were rated on a scale from 0 to 4 (symptom absent = 0, present initially after MVA but no longer being a problem now = 1, present & mild = 2, present & moderate = 3, present & severe = 4). We added the scores on these 8 items to form an overall index, labelled by us as the Post-MVA Neurological Symptoms scale (PMNS), see [6].We also scored 6 initial signs of cerebral concussion: feeling dazed, stunned, confused, disoriented, or dizzy (scored as absent=0, present=1) and loss of consciousness (no=0, not sure=1, brief=2, more than 5 minutes=3). We added the scores on these 6 items to form an overall index, labelled by us as the Immediate Concussion Symptoms scale (ICS), see [7].

Twenty-five of our patients also completed the PTSD Checklist for DSM-5 [8] to provide the diagnosis of PTSD, but this N of respondents is too low and hence the PTSD related data must be interpreted with caution.

Results and Discussion

The proportion of the persons over the diagnostic categories of the Insomnia Severity Index (ISI) were as follows: no clinically significant insomnia (2.0%, score < 8), subthreshold insomnia (4.9%, scores 8 to 14), moderate insomnia (28.7%, scores 15 to 21), severe insomnia (64.4%, scores >21).

The ISI in our sample ranged from 2 to 28 (mean 22.3, SD=5.3). These insomnia scores correlated moderately with depressive mood (r=.64) and with also with the post-concussion syndrome (scored via Rivermead scale) even after the item dealing with impaired sleep was removed from the Rivermead (r=.66). The insomnia also correlated with measures of anxiety (r=.48), and anger (r=.39), post-MVA neurological symptoms other than concussion (r=.36), and with diagnosis of PTSD (r=.50, however, N was only 25 for this last correlation). The insomnia scores also correlated with the index formed by the immediate concussion symptoms (feeling dazed, stunned, confused, disoriented, or dizzy and loss of consciousness): the correlation was low, but also still statistically significant (r=.28).

The ISI score also correlated with ratings, for a typical recent day, of the average MVA related pain (r=.37), the worst pain (r=.40), and the least pain (r=.31), as well as with a score that is a sum of these 3 variables (r=.41). These correlates of the insomnia scale are consistent with the clinical lore about consequences of an MVA.

The ISI scores were not correlated significantly (p was >.05, 2-tailed) with the age, gender, number of weeks since the MVA, and the number of past MVAs.

The psychometric properties of ISI in our sample were satisfactory: the Cronbach's alpha was .88 and the item total correlations (with the item of interest always removed from the total score) ranged from .55 to .80.

Conclusions

Patients with active post-concussion syndrome and with post-MVA depression experienced more severe sleep problems. The post-MVA pain, anger, anxiety, and neurological symptoms other than concussion were also significantly associated with impaired post-MVA sleep.

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