



Contents lists available at ScienceDirect

Sleep Medicine Reviews

journal homepage: www.elsevier.com/locate/smr

THEORETICAL REVIEW

Trauma associated sleep disorder: A parasomnia induced by trauma

Vincent Mysliwicz^{a,*}, Matthew S. Brock^a, Jennifer L. Creamer^b, Brian M. O'Reilly^b,
Anne Germain^{c,d}, Bernard J. Roth^b

^a San Antonio Military Medical Center, Department of Sleep Medicine, 2200 Bergquist Drive, Suite 1, JBSA Lackland, TX 78236, USA

^b Madigan Army Medical Center, Department of Pulmonary, Critical Care, and Sleep Medicine, Tacoma, WA, USA

^c University of Pittsburgh School of Medicine, Department of Psychiatry, Pittsburgh, PA, USA

^d University of Pittsburgh School of Medicine, Department of Psychology, Pittsburgh, PA, USA

ARTICLE INFO

Article history:

Received 15 May 2016

Received in revised form

12 January 2017

Accepted 20 January 2017

Available online xxx

Keywords:

Trauma associated sleep disorder (TSD)

Trauma

Nightmares

Parasomnia

Combat

Military

Veterans

Posttraumatic stress disorder (PTSD)

REM sleep behavior disorder (RBD)

SUMMARY

Nightmares and disruptive nocturnal behaviors that develop after traumatic experiences have long been recognized as having different clinical characteristics that overlap with other established parasomnia diagnoses. The inciting experience is typically in the setting of extreme traumatic stress coupled with periods of sleep disruption and/or deprivation. The limited number of laboratory documented cases and symptomatic overlap with rapid eye movement sleep behavior disorder (RBD) and posttraumatic stress disorder (PTSD) have contributed to difficulties in identifying what is a unique parasomnia. Trauma associated sleep disorder (TSD) incorporates the inciting traumatic experience and clinical features of trauma related nightmares and disruptive nocturnal behaviors as a novel parasomnia. The aims of this theoretical review are to 1) summarize the known cases and clinical findings supporting TSD, 2) differentiate TSD from clinical disorders with which it has overlapping features, 3) propose criteria for the diagnosis of TSD, and 4) present a hypothetical neurobiological model for the pathophysiology of TSD. Hyperarousal, as opposed to neurodegenerative changes in RBD, is a component of TSD that likely contributes to overriding atonia during REM sleep and the comorbid diagnosis of insomnia. Lastly, a way forward to further establish TSD as an accepted sleep disorder is proposed.

Published by Elsevier Ltd.

Introduction

Following traumatic experiences, sleep disturbances are frequently reported. The most common symptoms are insomnia and trauma related nightmares (TRN) [1]. The nightmares that trauma survivors develop are noted to be distinctly different than the nightmares which characterize idiopathic nightmare disorder [2,3]. Trauma related nightmares tend to be more severe and distressing to the individual, and in many (but not all) cases, associated with posttraumatic stress disorder (PTSD). Disruptive nocturnal behaviors (DNB) to include dream enactment behavior (DEB) and sympathetic activation are often reported in the context of TRN. Nocturnal movements with TRN can range from gross body movements to frank combative behaviors. These symptoms, which further distinguish TRN from idiopathic nightmares, have remained relatively poorly characterized. This is in part due to the frequent

association of TRN with PTSD as a variant of idiopathic nightmares, as well as the rare capture of nightmares and DNB in monitored settings [4].

Prior to the proposal of trauma associated sleep disorder (TSD) as a distinct parasomnia [5], these nocturnal phenomena was best described by Raskind: "The physiology of PTSD trauma nightmares differs from that of 'normal' dreams. Trauma nightmares are largely expressed during light sleep and disrupted rapid eye movement (REM) sleep, and often are accompanied by motor activity. Normal dreams, whether pleasant or unpleasant, most often arise from REM sleep that is characterized by a relative paralysis of large muscle movement" [6]. This description highlights the characteristics which distinguish TSD from nightmare disorder, most notably the presence of motor activity, but also that the nightmares potentially emanate from both non-rapid eye movement (NREM) and REM sleep. Additionally, this constellation of findings occurs exclusively while asleep, thus differentiating TSD from the diagnosis of PTSD.

In this article, we report on the historical findings consistent with TSD and develop the clinical and potential neurobiological

* Corresponding author. Wilford Hall Ambulatory Surgical Center, Sleep Disorders Center, 2200 Bergquist Drive, Suite 1, JBSA-Lackland, TX 78236, USA. Fax: +1 210 292 4325.

E-mail address: vincent.mysliwicz.mil@mail.mil (V. Mysliwicz).

Abbreviations

ACC	anterior cingulate cortex
CPAP	continuous positive airway pressure
CNS	central nervous system
DNB	disruptive nocturnal behaviors
DEB	dream enactment behaviors
EEG	electroencephalographic
EMG	electromyogram
GABA	gamma-aminobutyric acid
HPA	hypothalamic-pituitary-adrenal
IRBD	idiopathic REM sleep behavior disorder
LC	locus coeruleus
mPFC	medial pre-frontal cortex
NE	norepinephrine

NREM	non-rapid eye movement
OIF/OEF	Operation Iraqi Freedom/Operation Enduring Freedom
OSA	obstructive sleep apnea
PLM	periodic limb movements of sleep
PSQI-A	Pittsburgh sleep quality index-addendum
PSG	polysomnography
PTSD	posttraumatic stress disorder
REM	rapid eye movement
RBD	REM sleep behavior disorder
RPLA	REM sleep phasic leg activity
RWA	REM sleep without atonia
SLD	sublaterodorsal nucleus
SSRI	selective serotonin reuptake inhibitors
TRN	trauma-related nightmares
TSD	trauma associated sleep disorder

mechanisms of TSD. As there is a paucity of articles on nightmares and DNB emanating solely from traumatic experiences in the absence of PTSD, we review the scientific literature which has evaluated patients with PTSD and in some cases, REM sleep behavior disorder (RBD). In a portion of the literature evaluated, the patient's symptoms and overall clinical picture is, in our opinion, more consistent with the proposed criteria for TSD.

Initial reports of complex sleep disturbances after traumatic experiences

The effects of combat related trauma on sleep have long been recognized. Descriptions of complex behaviors associated with nightmares were reported during the Civil War. Wallace Woodford, a Union soldier who survived the Confederate prison in Andersonville, where many soldiers died from disease and starvation, "flailed in his sleep, dreaming that he was still searching for food" [7]. Marked sleep disturbances were reported in association with combat exhaustion that Bartemeier et al. described in World War II veterans [8]. While insomnia was the primary sleep component of combat exhaustion, "difficulties were experienced also in staying asleep because of sudden involuntary starting or leaping up, or because of terror dreams, battle dreams and nightmares of other kinds" [8]. In these historical reports, the observances of abnormal behaviors and movements in sleep in association with TRN were described relatively shortly after the inciting trauma. The concept that these sleep disturbances were only nightmares remained until Ross et al. reviewed the literature assessing sleep disturbances in PTSD [9]. One question they asked was if the dreams associated with PTSD were true nightmares or another sleep disorder. They compared and contrasted PTSD nightmares to night terrors and the newly proposed REM parasomnia, RBD. Two primary reasons supported PTSD dreams as night terrors (a NREM parasomnia): PTSD dreams tended to occur early in the sleep period and could have associated gross body movements. However, as most dreams occur during REM sleep and Schenk et al. [94] reported REM sleep without atonia in RBD patients, PTSD dreams may be a REM-related phenomenon.

Inciting factors for TSD

Combat exposure is the most frequently reported cause of TRN [10–12], although TRN are reported after maritime disasters [13], sexual trauma [14], burns [15], and other traumatic experiences [16]. The severity of the traumatic exposure is generally associated with nightmare intensity with increasing trauma severity typically associated with more intense nightmares [16,17]. Less severe

trauma can incite nightmares, but has not been reported to result in the other clinical manifestations of TSD. A cohort of college students who survived an earthquake experienced more nightmares than a control group [18]. However, nightmare severity was not more intense than controls and DNB were not reported. The context and setting in which the trauma occurs also appears to play a role in the development of TSD. Whereas military personnel in combat and sailors are typically exposed to extremely stressful situations and prolonged work periods with both acute and chronic sleep deprivation, other trauma survivors often lack such austere living situations. Sleep deprivation coupled with fragmented sleep have long been recognized as contributing factors to the sleep disturbances ensuing after combat [8,19]. These additional stressors likely contribute to the development of TSD as opposed to only TRN. A proposed model for the development of TSD is presented in Fig. 1.

Previous reports consistent with TSD

There are only a few studies [5,10,19–22] that have assessed trauma survivors and documented the occurrence of findings consistent with TSD. The first study performed polysomnography (PSG) in three men (ages 25, 29, and 35 y) with combat fatigue who were 2–4 wk removed from their combat experiences and medication-free at the time of their evaluation [19]. They were all classified as having substantial sleep deprivation prior to their evacuation from combat with the resultant symptoms of "severe insomnia, and recurrent nightmares with vocalization and much body movements." On their PSGs there were many body movements and bursts of tachycardia. Traumatic nightmares were reported in stage two sleep and one patient had a violent awakening with vocalizations. "Our case 1 awoke particularly violently, jumping out of bed screaming and hallucinating." The other notable finding was generalized elevated electromyogram (EMG) tone throughout the PSG, to include during REM sleep.

The second study to report patients with TSD-like findings evaluated 15 Vietnam veterans with PTSD [21]. Participants underwent a semi-structured psychiatric interview and five nights in a sleep lab. Nightmares were reported by 13 of 15 patients, with a typical onset between 01:00 and 03:00 h. The nightmares consisted of replays of prior combat experiences with body movements and reports of attacks by the patients on their bed partners. The in-lab PSG documented two patients with DNB. During REM sleep one patient removed the electrodes and walked around the room, stating he was in an ambush. Another patient had non-descript body movements in N2 associated with a dream of a gunfight. On the subsequent night, this patient awakened from REM sleep, thrashing about after a nightmare of mutilated bodies.

Download English Version:

<https://daneshyari.com/en/article/8691119>

Download Persian Version:

<https://daneshyari.com/article/8691119>

[Daneshyari.com](https://daneshyari.com)