



Violent somnambulism: A parasomnia of young men with stereotyped dream-like experiences



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ABSTRACT

Objective: To characterize a subgroup of arousal parasomnias associated with violent behavior in adults. **Design:** A pilot study on clinical and polysomnographic data of 13 adult patients seen in a tertiary sleep center for the suspicion of arousal parasomnia associated with violence.

Results: Nine young patients (8 males 1 female) had a common pattern of abnormalities: similar 'claustrophobic' dream-like experiences and complex, vehement dream enactments; no REM sleep without atonia on polysomnography. We call this syndrome 'violent somnambulism'.

Results: The rest of the patients had alcoholic delirium, partial epilepsy, possible REM sleep behavior disorder and a single sleep walking episode provoked by a sleeping pill.

Conclusions and hypothesis: Sleep related violence needs thorough diagnostic evaluation for preventing life-threatening consequences. Violent somnambulism appears to be a distinct NREM sleep-related overlap parasomnia.

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Introduction

The prevalence of adult sleep-related violence is 0.5–1.6% [1,2]. Because it may have severe medico-legal consequences including sexual abuse, unintended suicides and homicides [3–7], identifying and differentiating its potential causes is vitally important.

The known risk factors are the age below 35 years, male gender, sleep apneas, early awakening, daytime sleepiness, hypnagogic hallucinations, nightmares, depressed mood, sleep paralysis and arousal parasomnias [1,2,4,8].

The International Classification of Sleep Disorders (ICSD-2) [9] categorizes parasomnias in three main groups:

Disorders of arousal from NREM sleep (arousal parasomnias)

Sleepwalking.
Sleep terrors.
Confusional arousals.

Parasomnias usually associated with REM sleep

Nightmares.
Recurrent sleep paralysis.
REM sleep behavior disorder (RBD).
Parasomnia overlap syndrome [10,11].

Other parasomnias

Sleep-related dissociative disorders.
Parasomnia unspecified.
Sleep enuresis.
Sleep-related groaning.
Exploding head syndrome.
Sleep-related hallucinations.
Sleep-related eating.
Parasomnia due to drug, substance, or medical conditions.

Sleep walking, sleep terrors, RBD, parasomnia due to substances or medical conditions and malingering are the main conditions to be considered in the differential diagnostic workup of sleep related violence.

NREM parasomnias (prevalence 15–20% in children [12–14] and 1–4% in young adults [3,15]) are overlapping conditions with abnormal and partial arousal within an unstable NREM sleep [8,16–18]. They are characterized by inappropriate behavior during sleep, typically in the first third of the night. Sleep walking and sleep terror occur at the turning point of the first NREM sleep cycle,

Abbreviations: AHI, apnea–hypopnea index; CT, computer tomography; EEG, electroencephalography; EMG, electromyography; MRI, magnetic resonance imaging; NREM, non-rapid eye movements; REM, rapid eye movements; RSWA, REM sleep without atonia; S, somnambulism (sleep walking); SPECT, single photon emission computer tomography; VS, violent somnambulism.

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when NREM sleep changes from its deepening "slope" to an "ascending" one toward more superficial NREM sleep/awakening; or REM sleep [19] 1–1.5 h after falling asleep [20].

Although there are specific sleep micro-structural changes which might help diagnosing NREM parasomnias (EEG spectral studies of sleep walking subjects detect less delta power in the first sleep cycle than in controls; patients fail to show normal decrease of delta activity across the night [21–23]), however, the diagnosis of arousal parasomnias has remained clinical.

In *sleep walking* (somnambulism) the patient displays 1–30 min lasting epochs of complex motor activities like walking, moving objects, talking, dressing, eating, drinking or even driving. Some patients appear agitated and violent behaviors may occur. The patient may respond to commands and the episode usually ends with returning to bed and sleep.

Sleep terrors last 1–10 min and are characterized by prominent sympathetic signs like tachycardia, sweating, dilated pupils and pale face associated to the core affective outburst. Individuals suddenly waking from deep sleep produce a scream and appear terrified, possibly under the effect of (rarely reported) frightening dream-like experiences. Agitated behavior may result in injuries [19].

Classifications of sleep disorders (ICSD-2) [24,25,9] traditionally consider amnesia a basic criterion for both somnambulism and sleep terrors. There is general consent that only about 20% of dreams – called NREM sleep mentation – occur during NREM sleep [5], and classical teaching suggests that sleep walking individuals do not report related dream contents [26]. Recent studies have shown, however, that dreaming and mental activity during sleep is independent of the sleep state [27].

RBD, a REM sleep-related parasomnia, is characterized by early morning or dawn dream enactment due to the lack of physiologic muscle atonia and/or increased phasic EMG twitching during REM sleep (e.g. REM sleep without atonia; RSWA) proved by chin and limb EMG of polysomnography [9]. The RBD episodes of some seconds' duration are short fragments of vehement activity like jumping or falling from bed, hitting objects or shouting; frequently leading to injuries [28]. The prevalence of RBD is about 0.4% with 87% predominance of elderly men [1]. It is frequently related to neurodegenerative conditions [11].

Parasomnia-overlap disorder [10] (unifying the clinical features of RBD and arousal parasomnias) affects younger males than those affected by RBD, is considered a subtype of RBD because of the presence of RSWA.

Sleep related dissociative disorder is characterized by various dream-related behaviors, alternating or overlapping with wakefulness or other sleep behaviors; it is strongly associated to daytime dissociative states [5,11]. Polysomnography records show an irregular, fragmented sleep pattern, mixture of NREM sleep, wakefulness and REM sleep without fulfilling their criteria. The sleep-related nature of the dissociative events has not been unequivocally proven. This group of bizarre conditions seems to be a combination of sleep dysregulation abnormalities and psychological disorders, more suggestive of the latter [6].

Because in our sleep clinic we had to face the dramatic issue of sleep related violence in several young adults seen for the possibility of sleep walking or other NREM parasomnias apparently different from the generally harmless childhood variants [29,30], we aimed to characterize the subgroup of such patients.

Patients and methods

Violence in sleep is defined as an episode of "intense, turbulent, furious and often destructive action or force" during sleep [31].

We retrospectively evaluated 35 adult patients (16 males and 19 females) seen between 2005 and 2012 in the Sleep Clinic of the Institute of Behavioral Sciences of the Semmelweis University in Budapest. These patients were referred for the suspicion of sleep walking or other arousal parasomnia based on repeated or frequent sleep related episodes appearing in the first third of nights during recent months or years; reported by patients and bed partners. We selected for detailed analysis those thirteen patients, whose episodes were associated with occasional or regular violent behavior. The medical, neuropsychiatric and sleep history was taken from the patient and his/her bed partner or other eyewitness. Routine neurological examination and psychiatric interview were taken.

Each patient underwent sleep studies – at least one whole night standard polysomnography with additional respiration and limb movement channels (Somnomedix, Domino) [32]; three patients had two polysomnography nights, one had a 5-days video-EEG monitoring with polysomnography channels (Micromed System II). Eight of the patients had additional long-term (24 h) 16 channel EEG recording (Micromed System I). For detecting RSWA we used the recommended visual scoring criteria [33–36].

Nine patients underwent neuro-imaging (MRI or CT).

Results

The 13 patients' (12 males, 1 female; mean age: 29.07 ± 10.1 year, range: 19–58 years) main clinical characteristics are summarized in Table 1.

The patients' medical, neurological and psychiatric examinations were normal apart from SzJ, who had been treated for hypertension, hepatomegaly, alcohol withdrawal syndrome and a mild cognitive decline with the background of multiple subcortical lacunas on his CT brain scan. The rest of the patients were medically and mentally normal employees with no outstanding major life-traumas or distresses; not taking any regular medication. They had normal brain CT or MRI results. The patients' episodes had variable frequency; the duration varied between 3 and 30 min. Sleep deprivation and stressful situations generally had provoking effect; alcohol had some impact in three of them. None of them abused caffeine, sedatives, drugs or other stimulants.

The patients had at least one harmful or violent sleep-related episode (making them seek medical help); most of them had repeated ones as well as less scaring episodes in the first third of night sleep. During the violent sleep-related events the patients, led by their threatening dream-like experiences acted causing severe danger to themselves or their sleep partners. Their intense and complex actions were adequate in the context of the dream-content; aiming to avoid the dreamed danger. They vividly remembered their dreams and the consequent "dreamy" motivation of the dream-enactments, unlike the actions actually committed.

Nine of the thirteen patients had dreams that might be called "claustrophobic" (our wording): being strangled (KK), constricted by an enormous snake (NP), dangerously confined in a small place (PT and PZS the only female), endangered to be flooded (SzP) or the walls coming down on them making them hold the walls and run away (BG, FZ, NG);

Three of them (FZ, NG and SzP) grabbed their bed partner (and SzP his children) for saving them. Another time SzP ran out through the first floor window suffering lumbar vertebral fracture. NG awoke standing up on the windowsill with his fiancé in his arms. He, another time, ran out the second floor window and suffered cervical vertebral fracture.

PP hit his own front when he dreamed to box; SzK broke the furniture and bedroom walls while escaping from a quickly approaching "dreamy" train in a narrow tunnel. KK who dreamed

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