



## Case Report

## A case of adult night terrors



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## ABSTRACT

Night terrors are intense, often traumatic, and potentially dangerous events during nonrapid eye movement sleep; their etiology remains unknown and different protocols of variable efficacy have addressed the physiological and psychological aspects of this disorder. We present the case of a 58-year-old man who was treated for night terrors. The patient associated his disorder with persistent nightmares. After diagnosis with the use of ambulatory polysomnography and infrared video recording, sleep-education sessions were used to clarify the differences between the nightmares and night terrors, and help the patient reconceptualize the physiological and psychological dimensions of his condition. The patient exhibited marked improvement after intervention. This study highlights the benefits of providing an alternative explanatory model for a patient who has constructed a dysfunctional explanation of his condition. The study also offers some considerations about the nature of patient perceptions and their impact on the disorder.

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## 1. Introduction

Night terror (also called sleep terror or pavor nocturnus) is a kind of sleep disorder, which usually occurs in children and its frequency is reduced or most often disappears entirely by adulthood [1]. It consists of a succession of events, which is usually initiated by a loud vocalization, followed by autonomic arousal, confusion, and intense feelings of threat or danger. There is a considerable degree of amnesia about the event and a high risk of self-injury or even death when the patient attempts to escape the perceived danger while unaware of his surroundings [2]. Episodes are very difficult to interrupt and cause significant distress to the patient. Most patients exhibit considerable guilt over the impact of the disorder on their families and partners. The prevalence of night terrors in adults ranges from 1% to 4% in the adult general population [1,3]. However, there is no general consensus on the course of treatment, and their etiology remains unknown [4].

## 2. Case report

A 58-year-old man in good health was seen in the sleep clinic because of frequent episodes of nighttime disturbances, which he described as “intense nightmares” for the past year. He was

accompanied by his wife during the intake interview. He was employed in education and appeared to have a high intellect, good social skills, and an elevated verbal capability. He described himself as a light sleeper in general with no sleep problems prior to the onset of these disturbances. He admits that in the past 5 years he has been in an almost constant state of increased anxiety and arousal related to severe health problems in his wife; he also noted that the onset of these disturbances coincided with a relapse in his wife's illness after a hiatus brought about by successful treatment. He experienced sudden awakening, always in the first 3–4 hours of sleep. The prevalent feeling was that of agony and for some time after the event he felt “his heart pounding”, shortness of breath, increased pressure in both ears, sweating, and tight muscles in his legs and arms. A few seconds later he had the feeling that something “terrible” had happened. He immediately thought of his wife, only to discover that she was awake and trying to comfort him, and then gradually all symptoms ceased. His wife reported that he woke her up with a scream, which the patient did not seem to remember. He pointed out that the occurrence of an episode largely depended on his emotional state. He noticed that the episodes became more frequent when he had heightened anxiety over the health of his wife. Furthermore, the patient stated that a specific nightmare preceded awakening. The patient was an avid reader of police novels and usually read in bed prior to sleep or in order to sleep. The ensuing nightmare always contained a similar set of events: the “criminal” of the novel pursued his wife; his facial characteristics were present to the extent that they were revealed in the novel or in some other cases absent if his identity had not yet come to light;

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the patient viewed the events from a close distance at a first-person angle and tried to intervene. When he realized that he could not stop the criminal he woke up in despair. In a few instances he managed to approach the scene and woke up while engaged in a physical struggle with his opponent. The setting of the scene was predominantly his house or a familiar street leading to it. There was no sound or color (the scene took place at night) apart from a vague impression that his wife was dressed in white. The predominant theme here seemed to be his effort to help his wife and his frustration at his inability to do so or his agony even when he succeeded. Upon awakening, he also recalled visual events such as “insects crawling at the far end of the room” only to disappear when the bedroom light was turned on. He cited the following two main concerns: his inability to sleep and disturbance to his wife.

Upon receipt of approval for the present study from the South West 3 Research Ethics Committee, the patient was informed about the study and he agreed to undergo ambulatory overnight polysomnography with synchronized video recording at his house. An Embla digital recorder was used, which is an ambulatory 16-channel recorder (electroencephalography, 4 channels; electrooculography, 2 channels; and electromyography, 1 channel) with acquisition onto a portable computer using Somnologica software. This small recorder can be worn attached to a belt while the participant is awake, and put under the pillow at bedtime. The recording system allows for a sensitivity of 5  $\mu\text{V}/\text{mm}$  when displayed on replay, with a bandwidth of approximately 3 dB at 0.5 Hz and 30 Hz. A reliable artifact-reduction system minimizes airborne and movement-related artifacts. Monitoring of incoming signals from the participant can be carried out through a socket on the recording software so that the integrity of the signal can be determined. Visual stage corrections of the ensuing hypnogram were made according to the Rechtschaffen and Kales [5] criteria. To record in full the nature of the patient's nighttime experience, a mixed infrared video recording was done using a Sony infrared camcorder and a Panasonic video recorder. The Beck Depression Inventory (BDI) [6], State Trait Anxiety Inventory (STAI) [7], and Pittsburgh Sleep Quality Index (PSQI) [8] were completed by the patient prior to night terrors, the recording.

A diagnosis of night terrors was elicited from the polysomnography, which showed sudden awakening during the first 3 hours of sleep during nonrapid eye movement (NREM) sleep and staged as part of a Sleep Stage 4 (presently N3) episode approximately 2 hours after sleep onset during the second N3 sleep cycle. There were no abnormalities that would point to an epileptic-type phenomenon, increased muscle tone, or phasic muscle activity during rapid eye movement (REM) sleep. The diagnosis was also confirmed by the infrared video recording, which showed a pattern of arousal, sudden nonpurposeful movements, vocalizations, and confusion, which are reported to be present in night terrors [9]. The patient also had an elevated STAI score of 56, indicating severe anxiety, whereas his BDI score of 7 was within normal parameters. The PSQI score was 7.1, indicating clinically meaningfully disturbed or poor sleep.

The etiology of night terrors [10] is presently unknown [4]. Although a number of medical conditions such as obstructive sleep apnea and restless leg syndrome are associated and may precede the onset of the disorder, there are limited data on affected physiological pathways that can initiate it [11]. Psychological conditions such as anxiety are also implicated [12]; it has been suggested that alleviation of anxiety symptoms with either antianxiety medication or psychological therapy may improve the condition of patients, but little is known about the actual effectiveness of these methods [13]. During the assessment phase, the therapist and our client conceptualized the case based on models derived from the psychopathology of anxiety-related insomnia [14,15]. Although the

episodes were initially associated with high levels of anxiety, it became apparent that the anticipation of an episode soon led to a self-reinforcing pattern characterized by catastrophizing, selective attention focused on the disturbances, and negative emotionality, all of which served in maintaining a state of heightened arousal, which in turn precipitated the disturbance by increasing arousal frequency [16]. A secondary issue was that the patient associated his nightmares with the night terrors, creating an explanatory framework that accentuated the problem.

Because there is no accepted protocol for night terrors intervention [10], and as the patient had previously experienced drowsiness and decreased daytime performance with the use of benzodiazepines, we decided to supplement a monthly course of 20 mg paroxetine [17] nightly with a number of sleep-education sessions. Paroxetine increases REM latency and slow wave sleep if administered in the daytime [18], which could increase night terror episodes, but there is no evidence of this adverse effect with nighttime administration; paroxetine does not affect morning performance or cause drowsiness such as the more traditionally used benzodiazepines. During the sleep-education sessions, information was provided about all aspects of sleep, current research was presented, and clarification was given to address misconceptions about the nature of and differences between nocturnal events such as nightmares and night terrors. This could help the patient understand the nature of the episodes, and their place in the continuum of sleep physiology, and also disassociate these episodes from REM events such as dreams. The aim was to minimize the daytime focus and anticipation, and hence the negative emotionality and arousal. This course of treatment was decided on because of the inquisitive personality and the high level of literacy of the patient. The patient also completed a sleep diary for 1 month after the seven 45-minute sleep-education sessions.

The sleep of the patient improved slowly and incrementally over 1 month. Sleep onset latency was reduced from over 1 hour to 20 minutes; his sleep efficiency was 0.86, which was relatively low but within the normal range. The PSQI score decreased to 4.7, an elevated normal result, whereas the STAI score improved to 39, indicating mild anxiety. The patient and his wife reported that the attacks decreased slightly (from an average of 5/week to 4/week), but most noticeable was a decrease in the feelings of panic and terror after an attack. Furthermore, daytime anticipation and ruminations about the expected “attack” were reduced as the patient accepted the physiological nature of the nighttime events.

### 3. Discussion

This case study demonstrates that when addressing confusion about the nature of distressing experiences, a more rational approach can be used, which can reduce the resulting anxiety. Night terrors and nightmares are distinct clinical and physiological phenomena [19,20]. Nightmares and most dreams are events arising from REM sleep, whereas night terrors occur during NREM sleep. Nightmares are characterized by heightened emotionality invested in or accompanying the visual event, and are rich in imagery and open to recollection. By contrast, night terrors are characterized by absence of imagery or, when imagery is present, it mostly resembles a passing visual hallucination with no meaningful content. They are also hypothesized to be artifacts of visual adjustment to a dark environment, such as the unidentified crawling shapes our patient experienced [21]. The imagery is not consistent with the hypnopompic hallucinations present in narcolepsy, which are usually characterized by geometric shapes or light speckles [22], and there are no other narcoleptic symptoms such as decreased REM latency or daytime narcoleptic episodes. Although nocturnal panic attacks are common in patients with

panic disorder, a very small subset primarily experiences nocturnal panic episodes and an ever smaller subset experiences nocturnal panic episodes in the total absence of daytime panic [23]. The duration of the disturbance (under 2 minutes) in our patient would make a diagnosis of nocturnal panic attack (with 2–8-minute duration) marginally justifiable. Similarly, we had to exclude the possibility of confusional arousal mainly because of the strong vocalizations and absence of amnesia after the episode, both common characteristics of that disorder [24]. The distinction of night terrors from nocturnal frontal lobe epilepsy (NFLE) is far more challenging, because sudden awakening from NREM sleep, vocalizations, and agitation are common in both disorders. However, NFLE has stereotypical motor phenomena and occurs up to 20 times/night, compared with one or two times in night terrors. Secondary differentiating factors are an absence of an epileptic aura in night terrors and no family history or daytime seizures [25]. Given the vivid nature, strong emotional content, and repeated occurrence of our patient's dreams, a comorbid or concurrent nightmare disorder could not be excluded and could be a second diagnosis [26].

Our patient associated the two phenomena (nightmares and night terrors), citing the repeated nightmares as the "cause" of the night terrors. Because the specific content of the nightmares was related to a real-life situation, the illness of his wife and his perceived inability to assist her, he assumed that the same inability caused the night terrors, with additional guilt about disturbing his wife's sleep. In this case, the explanatory model constructed by the patient was not simply faulty, and it also affected the perception of his disorder and increased his level of distress.

It is interesting that although the frequency of night terror episodes was only marginally reduced in our patient, his overall sleep quality improved and his anxiety was reduced. Although the content of his dreams was arguably related to mental stress, the same cannot be said for the night terrors. A possible explanation is that the underlying cause of the night terrors remained untreated or partially treated, but his perception about these disturbances (or his self-constructed explanatory model) was altered to the degree that his response improved. In a similar manner, dreams that were regarded as nightmares did not have the accentuated impact of dreams previously associated with the frightening experience of the night terrors.

Sleep as a state of consciousness is open to a misinterpretation, partially because of our objective limitations in experiencing sleep events arising from the physiological status of areas such as the frontal cortex [27], but also because of the relatively limited scientific knowledge about sleep. Because this is a case study, we need to exercise caution in the interpretation and potential generalizations of the results. It is likely that the improvement in sleep indices and reduction in anxiety manifestations occurred because of the information the patient received. This is no guarantee that the same approach will have the desired effect in a person less inclined to scientific inquiry and capable of processing the same information.

An interesting consideration is why the patient felt that nightmares and night terrors were sequential. We know that the two events could not have been sequential, as they arise from different sleep stages; furthermore, there is a high probability that the night terrors preceded the nightmares as REM periods become more frequent and prolonged in the second half of the night [28]. One can only speculate about the exact timing of integration of the two events, possibly in the morning while awakening. Although there is an increased body of research data pointing to the fact that

"dreams" are random and inherently meaningless responses to brain activation during sleep [29], we should acknowledge that our patients already have a lay explanatory model in place and that makes nighttime experiences ultimately meaningful for them.

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