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Literature Review

Unveiling Sexsomnia: An In-Depth Exploration

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Abstract

Sexsomnia is one type of parasomnia that can negatively impact the quality of life for individuals affected and potentially lead to legal complications. The growing prevalence of sexsomnia demands attention due to the widespread misinformation and the misconception that it is not a medical issue. This review will delve deeper into sexsomnia, including its diagnosis and management. Parasomnia refers to undesired physical events or experiences that occur during various stages of sleep. Sexsomnia, a form of parasomnia associated with non-rapid eye movement (NREM) sleep, is characterized by unconscious, abnormal sexual behavior. Sexsomnia can manifest during any sleep phase but is most frequently observed during NREM sleep. Clinical manifestations of sexsomnia include vocalizations, fondling, kissing, masturbation, and even engaging in sexual intercourse without recollection upon waking. A comprehensive evaluation, including a thorough medical history and additional investigations such as polysomnography with electroencephalography, aids in establishing a diagnosis of sexsomnia. Presently, there is no definitive treatment for sexsomnia. Management approaches involve non-pharmacological and pharmacological. Sexsomnia, if not recognized as early as possible, can have detrimental effects on both the affected individual and the surrounding environment. Lack of awareness about sexsomnia and hesitation to seek treatment contribute to the lack of information about its prevalence. In-depth knowledge is crucial for accurate diagnosis and determining the appropriate management strategies for this condition. Further research is needed to determine sexsomnia and its management.

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1. Introduction

Sexsomnia is a type of parasomnia, a disorder of abnormal sleeping behavior. Growing evidence of sexsomnia needs to be a concern because it can reduce the sufferer's quality of life.[1] The lack of awareness regarding sexsomnia as a medical condition and the hesitancy of individuals to seek therapeutic assistance contribute to the scarcity of information about its prevalence in the general population.[2] Consequently, it is crucial to address this issue given its potential to significantly impact the quality of life for those affected.[1] This review aims to shed light on the risk factors and diagnostic approaches associated with sexsomnia while also exploring potential management strategies for the future.

2. Review

Parasomnias encompass a range of undesired physical events or experiences that occur during the process of falling asleep, during sleep, or upon awakening.[3] These conditions involve various manifestations, such as dreams, distorted perceptions, dysphoric emotions, abnormal movements and behaviours during sleep, and dysregulation of the autonomic nervous system.[4] The International Classification of Sleep Disorders (ICSD) provides a comprehensive classification of parasomnias, which can be grouped into three main clusters: non-rapid eye movement (NREM)-related, rapid eye movement (REM)-related, and other types, as outlined in Table 1.

Table 1. Classification of parasomnias[3]

Disorder
NREM-related parasomnias
Disorder of arousal
Confusional arousals
Sleep walking
Sleep terrors
Sleep-related eating disorder
REM-related parasomnias
REM sleep behavior disorder
Recurrent isolated sleep paralysis
Nightmare disorder
Other parasomnias
Exploding head syndrome
Sleep-related hallucinations
Sleep enuresis
Parasomnia due to a medical disorder
Parasomnia due to a medication or substance
Parasomnia, unspecified
Isolated symptom/normal variant
Sleep talking (somniloquy)

Sexsomnia, a clinical subtype of confusional arousal, is a sleep-related condition characterized by abnormal sexual behavior occurring without the individual's awareness.[5] These episodes can involve a range of behaviours, including vocalizations, fondling, kissing, masturbation, sexual assault, attempted intercourse, and even complete sexual intercourse, with no recollection upon awakening. The most commonly observed behaviours during sexsomnia events are sexual intercourse and fondling.[6] Typically, these episodes last for less than 30 minutes and occur suddenly.

The exact prevalence of sexsomnia remains uncertain; however, a research conducted in Norway provided estimates for both the lifetime and current prevalence of sexual behaviours during sleep, which were reported as 7.1% and 2.7%, respectively.[7] Furthermore, it is noteworthy that sexsomnia tends to occur more frequently among males.[8]

Risk Factors of Sexsomnia

The occurrence of sexsomnia involves a complex interplay of predisposing, priming, and precipitation factors, as depicted in Figure 1.

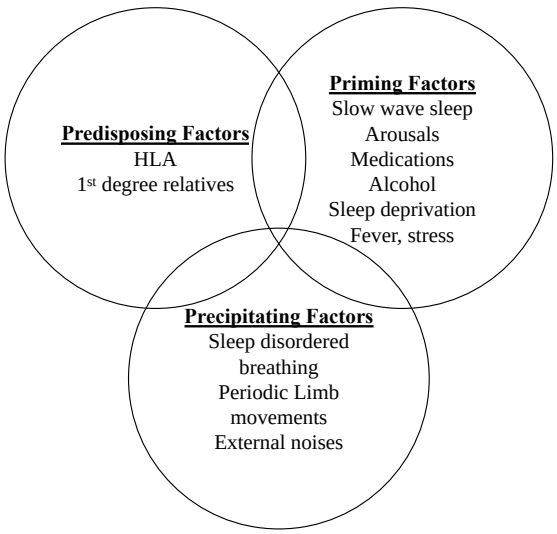

Figure 1. Factors that increased the incidence of sexsomnia.

Genetic factors are known to influence the incidence of parasomnias, with a higher prevalence of HLA B1*05:01 and HLA DQB1*04 observed in NREM parasomnias.[8] Individuals with a family history of parasomnias exhibit an increased prevalence of similar parasomnias.[9] Several priming factors, including alcohol consumption, recreational drug use, sleep deprivation, sleep-related breathing problems, bruxism, restless leg

syndrome, and periodic limb movements, contribute to the development of sexsomnia.[6] Additionally, certain conditions such as sleep-disordered breathing and exposure to external noises can precipitate the occurrence of sexsomnia.

Pathophysiology of Sexsomnia

During the sleep cycle, an individual experiences two alternating phases: REM and NREM phases. The NREM phase can be further divided into four distinct stages known as N1, N2, N3, and N4. The N1 stage represents the transition between wakefulness and sleep, lasting approximately 3 to 5 minutes. It is characterized by closed eyelids, reduced muscle tone, and noticeable eye movement in both horizontal directions. As the individual progresses to the N2 stage, eye movement ceases, muscle tone remains diminished, and sleep becomes deeper compared to the previous stage. The N3 stage signifies an even deeper level of sleep compared to the preceding stages. Finally, in the N4 stage, the sleep is at its deepest, and the person becomes more difficult to awaken.[9]

The progression from one sleep stage to another is not immediate but involves a reorganization and transition of different neural centers before reaching a distinct point of noticeable manifestation. While sexsomnia commonly occurs during the slow-wave sleep phase (N3), it can also manifest during the N2 phase.[10] To gain insight into the underlying mechanisms of sexsomnia, it is beneficial to examine the pathophysiology of NREM parasomnias, which involves factors such as sleep state instability, sleep inertia, and dissociated states.[11,12] A comprehensive understanding of these processes can aid in comprehending the pathophysiology of sexsomnia (Figure 2).

Sleep state instability

This condition is considered to be the initial stage of NREM parasomnia. Within the NREM sleep phase, there is a physiological component known as the cyclic alternating pattern (CAP), which is functionally associated with oscillations of arousal and serves as a measure of NREM sleep instability. Multiple studies have demonstrated an elevated CAP rate during the N3 sleep phase.[13,14] An analysis of electroencephalographic (EEG) data reveals that the frequency of awakenings from sleep increases during the N3 sleep phase. These findings support the notion of instability emerging during the NREM sleep phase, characterized by recurrent arousals, which are believed to be the triggering factor for confusional arousals.

Sleep inertia

This situation is characterized by the experience of awakening from incomplete sleep. The process of transitioning from sleep to wakefulness occurs gradually. When abruptly awakened from the NREM sleep phase, there is a decrease in cerebral blood flow compared to the pre-sleep state. However, within a span of 15 minutes, the cerebral blood flow gradually increases, leading to an enhancement in the level of alertness.

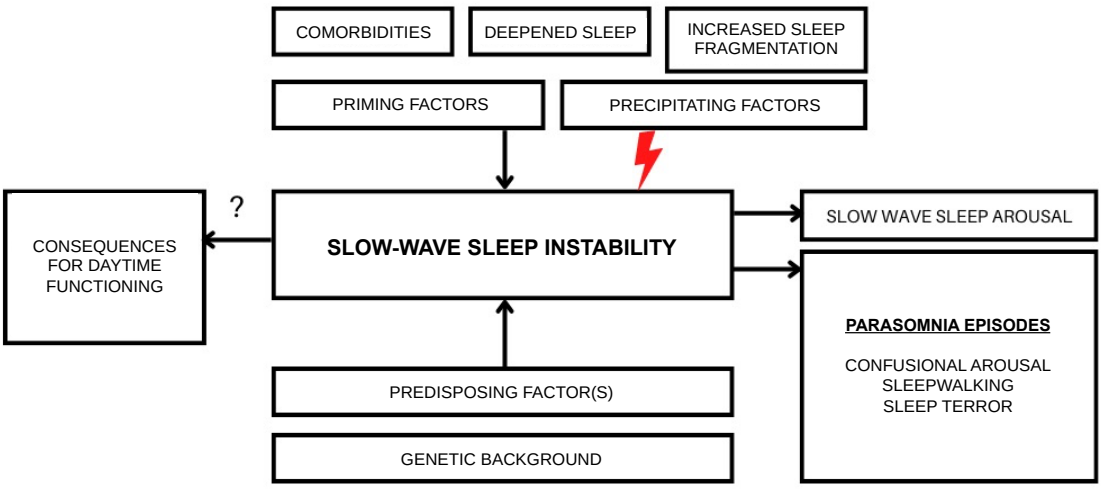

Figure 2. Pathophysiological model of disorders of arousal.[15]

Dissociated state

The dissociated state refers to the brain's ability to simultaneously exhibit both sleep and wakefulness by deactivating higher cognitive regions in the central nervous system's motor pathway during the stimulation phase. Local frequency activation signifies a sudden interruption of the slow wave pattern in the motor cortex, accompanied by the presence of alpha waves and/or beta rhythms. Concurrently, there is an increase in slow waves observed in the dorsolateral prefrontal cortex, indicating the coexistence of sleep and wakefulness.

Diagnosing Sexsomnia

Prior to confirming the diagnosis of sexsomnia, healthcare practitioners should conduct thorough history taking and perform additional assessments.

History Taking

History taking must include sleep history, underlying medical history, family history, history of substance abuse, and current medications.[16] Sleep history should screen for past and current sleep pathologies.[6] It is important to rule out other possible diagnoses such as other sleep disorders, nocturnal seizure disorder, paraphilias, and the possibility of secondary gain, malingering.[16]

Table 2. Criteria for Sexsomnia[3,17]

DSM-5 criteria for NREM sleep arousal disorders and sexsomnia of sleepwalking
Criterion A. Recurrent episodes of incomplete awakening from sleep, usually occurring during the first third of the major sleep episode, accompanied by sleepwalking Criterion B. No or little dream imagery is recalled Criterion C. Amnesia for the episodes is present Criterion D. Clinically significant distress or impairment Criterion E. Disturbance is not attributable to the effects of a substance Criterion F. Coexisting mental or medical conditions do not explain the episodes Diagnosed as "NREM sleep arousal disorders, sleepwalking type, with sleep-related sexual behavior (sexsomnia)"
ICSD-3 criteria for disorders of arousal, including sleepwalking and confusional arousal subtypes
Criterion A. Recurrent episodes of incomplete awakening from sleep - The events usually occur during the first third of the major sleep episode - The individual may continue to appear confused and disoriented for several minutes or longer following the episode Criterion B. Inappropriate or absent responsiveness to efforts of others to intervene or redirect the person during the episode Criterion C. Limited or no associated cognition or dream imagery Criterion D. Partial or complete amnesia for the episode Criterion E. Another sleep disorder, mental disorder, medical condition, medication, or substance use does not better explain the disturbance
Confusional arousals
Criterion A. General NREM disorders of arousal criteria (above) are met Criterion B. The episodes are characterized by mental confusion or confused behavior that occurs while the patient is in bed Criterion C. There is an absence of terror or ambulation outside of the bed
Sleepwalking
Criterion A. General NREM disorders of arousal criteria (above) are met Criterion B. The arousals are associated with ambulation and other complex behaviors out of bed

Physical Examination

It is commonly observed that the physical examination outcomes generally do not reveal any distinct irregularities. Numerous instances of sexsomnia have indicated the presence of obesity.[6,18]

Additional Examination

The polysomnography results in sexsomnia cases demonstrated a notably elevated frequency of awakenings occurring during the N3 stage, also known as slow-wave sleep. According to the study conducted by Dubessy et al., it was observed that eight out of the patients (equivalent to 47%) experienced abnormal partial awakenings, accompanied by dissociated activities on EEG channels during at least one N3 awakening.[19] These abnormal activities included:

(1) A continuous slow delta rhythm on the frontal left and right channels contrasting with the rapid alpha rhythm on the posterior channels.
(2) Concomitant, superimposed slow (θ/δ) and rapid (α) rhythms on all channels.
(3) Diffuse slow (δ or θ) rhythm contrasting with sustained motor activity.

Moreover, the utilization of EEG (electroencephalography) in examining the behavioral patterns of individuals suspected of having sexsomnia during sleep is also possible. The EEG recordings during a sexsomnia episode can reveal a dissociative pattern that frequently resembles a seizure-like activity.

Management of Sexsomnia

Due to the lack of a comprehensive understanding regarding the mechanism of sexsomnia, explicit treatment options were previously unavailable. However, recent advancements have provided some guidance in managing sexsomnia cases within the broader scope of parasomnia management. This includes the implementation of both non-pharmacological and pharmacological strategies.

Non-pharmacological approach

- Patient Education

  Comprehensive patient education for individuals with sexsomnia should encompass the potential legal implications that may arise in their interactions with sleeping partners. Additionally, it should incorporate guidance on practicing good sleep hygiene, implementing effective sleep management techniques, abstaining from alcohol and other substances, and creating an optimal sleep environment.[6]

- Psychotherapy

  Psychotherapy has demonstrated potential efficacy in treating various NREM parasomnias, including sexsomnia. Rahmatullah et al. discovered that cognitive behavioral therapy (CBT) shows promise in reducing symptoms associated with sexsomnia. Moreover, Contreras et al. highlighted the effectiveness of hypnosis as a therapeutic approach for managing sexsomnia.[20] Notably, one advantage of hypnotherapy over CBT is its shorter duration, typically requiring only 1 to 6 sessions, while CBT necessitates a longer treatment period.

- Continuous positive airway pressure (CPAP)

  According to Contreras et al., the application of CPAP at a pressure of 8 cmH_2O has been shown to effectively manage both breathing-related sleep issues and instances of masturbation occurring during NREM sleep.[20] Additionally, Muza et al. highlighted the utility of CPAP in alleviating symptoms associated with sexsomnia in patients.[21]

Pharmacological Approach

To date, there is no specific pharmaceutical intervention designed specifically for the treatment of sexsomnia. However, several case reports have suggested the potential usefulness of clonazepam at a dosage range of 0.5-1 mg in managing sexsomnia.[6,21] Furthermore, the administration of paroxetine at a dosage of 5-10 mg has been shown to enhance slow-wave sleep and reduce instances of sleep disturbances, although it may lead to side effects such as erectile dysfunction.[22] Other medications, including trimipramine, lamotrigine, olanzapine, carbamazepine, clomipramine, fluoxetine, escitalopram, and duloxetine, have also been employed with limited success rates.[21,22]

3. Summary

Lack of awareness about sexsomnia and hesitation to seek treatment contribute to the lack of information about its prevalence. From this literature, we can conclude that sexsomnia occurs during slow-wave sleep N3 but can also manifest during N2. The prevalence of sexsomnia itself is

still not known for certain, but it occurs more often in men. This condition includes a complex group of genetic, priming and precipitating factors. Diagnosis includes a thorough history, physical examination, and polysomnography. Until now, there is still no specific treatment for cases of sexsomnia. Treatment for sexsomnia includes non-pharmacological and pharmacological approaches. Further research is needed to determine sexsomnia and its management.

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Author's Contribution

All authors have contributed to the final manuscript.

Conflict of Interest

The are no potential conflicts of interest to declare.

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