

Chapter 3

Classification of Parasomnias

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Introduction

Parasomnias are described in the International Classification of Sleep Disorders, 2nd edition (ICSD-2) as “undesirable physical events or experiences” that occur during sleep itself or during transition into or arousal out of sleep [1]. The phenomena contained within this category of disorders may include movements, autonomic disturbances, emotional experiences, abnormal perceptions, behaviors, or combinations of these component features. It is not surprising then that parasomnias include an array of disorders with varied presentations.

Given the broad nature of the definition, there is significant overlap between parasomnias and other sleep disorders. The initial ICSD included many clinical entities as parasomnias that have subsequently been reclassified in ICSD-2. For example, sleep related bruxism and sleep related leg cramps have been moved into a different category, the sleep related movement disorders [1, 2]. In this chapter, an outline of the various parasomnias will be presented according to the categorization used by the ICSD-2. Details of the various parasomnias discussed here, including their management, will be presented in subsequent chapters.

Categories of Parasomnia

The current classification scheme separates parasomnias based upon the sleep stage in which they predominantly occur [1] (Table 3.1). Under this system, the disorders are divided into (1) non-rapid eye movement (NREM) parasomnias, such as disorders

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Table 3.1 Categories of parasomnias according to the International Classification of Sleep Disorders, 2nd edition. (Source: Data from [1])

Categories of parasomnias	
Non-REM parasomnias	Confusional arousals Sleepwalking Sleep terrors
Parasomnias associated with REM sleep	REM sleep behavior disorder Recurrent isolated sleep paralysis Nightmare disorder
Other parasomnias	Sleep related dissociative disorder Sleep related groaning (Catathrenia) Exploding head syndrome Sleep related hallucinations Sleep related eating disorder Sleep enuresis Parasomnia: unspecified Parasomnia due to drug or substance Parasomnia due to medical condition

of arousal, (2) disorders associated with rapid eye movement (REM) sleep, and (3) other parasomnias, a category that includes parasomnias that occur independent of sleep stage. Another useful distinction is that of separating primary parasomnias from parasomnias secondary to drugs or substances, and parasomnias secondary to general medical conditions.

NREM Parasomnias

NREM parasomnias include disorders of arousal as well as disorders of sleep–wake transition. The disorders of arousal are the most common parasomnias [3] and include confusional arousals, sleep terrors, and sleepwalking. These parasomnias are more common in childhood and usually resolve as the child gets older. A feature of parasomnias within this category is their exacerbation by things that deepen sleep such as CNS depressants and rebound from sleep deprivation, as well as by features that increase the number of arousals one experiences [4]. Other sleep disorders, such as periodic leg movements and sleep apnea, can serve to increase disorders of arousal in this way [4]. Because NREM sleep is more common in the first third of the night, the behaviors associated with NREM parasomnias tend to emerge during this time period [5]. Thus, the time of occurrence can provide a clinical clue when evaluating a patient with unusual nighttime behavior.

Confusional Arousals These brief episodes, generally lasting less than 10 minutes, present as confusion, disorientation, inappropriate responses to external stimuli, and impaired perception [6]. While the individual may exhibit some automatisms, the

fearfulness characteristic of sleep terrors is absent, as is the complex motor activity that is seen in sleepwalking. The episodes are followed by a period of retrograde amnesia to the event.

Sleepwalking Sleepwalking, or somnambulism, shares the impaired responsiveness and disorientation seen in other NREM parasomnias. Its hallmark is complex motor activity, in which the individual gets up from bed and begins to walk about. Other complex behaviors such as cooking and driving may be seen, however the individual exhibits a degree of clumsiness and lack of attention to their surroundings which can result in severe injury from falling over furniture or down stairs, or cutting oneself on broken windows or mirrors. Episodes last around 15 minutes but longer events lasting hours have been reported [6]. Episodes of sleep walking violence, including homicides, have also been reported [7]. Sleep sex (also referred to as sexsomnia) has also been increasingly reported as a subset of sleepwalking with particular forensic implications [8]. As in confusional arousals, complete amnesia to the event is typical upon waking [6].

Sleep Terrors Sleep terrors are abrupt events in which the individual sits up, appearing frightened, and often screams. There is evidence of sympathetic arousal with dilated pupils and tachycardia, and the individual is usually inconsolable [6]. Despite appearing awake, the individual is unresponsive to external stimuli, just as with confusional arousals and sleepwalking. After a period of seconds to 2–3 minutes, he or she will usually return to sleep and have amnesia to the event on waking [6].

REM Parasomnias

This category contains three disorders that are associated with REM sleep. Two of the disorders (REM sleep behavior disorder (RBD) and recurrent isolated sleep paralysis) represent dyscoordination of the atonia that is a hallmark of normal REM sleep. The third parasomnia associated with REM sleep is nightmare disorder [1]. Because REM sleep is more common in the latter part of the night, these disorders typically occur in the second half of the sleep time.

REM Sleep Behavior Disorder

RBD is characterized loss of the normal skeletal muscle atonia during REM sleep, with subsequent dream-enactment behavior. Upon waking, individuals can usually recall the dream but do not remember acting it out. Unlike most other parasomnias, RBD is more common as individuals get older and has a strong male predominance. It is often associated with other neurological conditions, most classically Parkinson disease, but can also be seen independently [9]. An association of RBD with psychiatric disorders, particularly posttraumatic stress disorder, has been noted as well [10].

Recurrent Isolated Sleep Paralysis

Where RSBD is the inappropriate loss of REM-related skeletal muscle atonia, recurrent isolated sleep paralysis represents the presence of skeletal muscle atonia inappropriately in the setting of wakefulness. The episodes occur most frequently at the beginning of the sleep period, with another peak near the end of the sleep period. While gross movements are impossible, the individual is often able to open his or her eyes and remains aware of the surroundings. These episodes resolve spontaneously after a few minutes, and in some individuals may be aborted by tactile stimulation [6]. These episodes are classically seen in association with narcolepsy, but can also be seen in normal individuals, especially in conjunction with changes in sleep schedule or other sleep disruptions.

Nightmare Disorder

Frequent awakening from sleep with recall of frightening dreams is the hallmark of nightmare disorder. There is full-alertness on awakening without confusion or disorientation, in contrast to sleep terrors where the individual will appear anxious and fearful but also have impaired responsiveness. The individual with nightmare disorder has clear recall of his or her dream. Nightmares are usually accompanied by delayed return to sleep after the episode, and they often occur in the second half of the night. Both these characteristics help differentiate nightmare disorder from sleep terrors [1].

Other Parasomnias

The third category of parasomnias recognized in ICSD-2 consists of a diverse group of phenomena that do not have a restriction to either REM or NREM sleep.

Sleep Related Dissociative Disorder

Dissociation, the immature psychological defense mechanism of isolating traumatic or distressing experiences, manifests in five categories according to the Diagnostic Statistical Manual of Mental Disorders, Fourth edition (DSM-IV). These are dissociative amnesia, dissociative identity disorder, dissociative fugue, depersonalization disorder, and dissociative disorder not otherwise specified [11]. Of these, dissociative identity disorder, dissociative fugue, and dissociative disorder NOS have been associated with sleep-related episodes [12]. These episodes occur during wakefulness, in the period immediately prior to sleep onset or after awakening. The spectrum of behaviors that can be exhibited during a dissociative episode can include agitation,

fugue states in which the patient will leave the home and travel without being able to recall the details of their past, or show the emergence of distinct personalities that control their behavior. Many patients with sleep-related dissociative episodes will also exhibit daytime episodes, and have a history of traumatic events such as abuse.

Sleep Related Groaning (Catathrenia)

In sleep related groaning, the individuals exhibit prolonged expiratory groaning during sleep. Most individuals with this parasomnia exhibit these episodes on a nightly basis, and do not show any movements or respiratory distress, and patients do not report dreaming in association with the episodes. For many individuals, the catathrenia arises both during REM and NREM sleep [13, 14].

Exploding Head Syndrome

Exploding head syndrome (EHS) is a typically benign condition in which the individual experiences a loud noise, occasionally accompanied by a flash of light, or a sudden jerk during drowsiness or sleep onset. While usually painless, it may be accompanied by a brief stab of pain [1]. The episodes are benign and generally resolve on its own, and are may be a sensory variant of the hypnic jerk.

Sleep Related Hallucinations

Hallucinations occurring in relation to sleep are termed hypnagogic if they occur during sleep onset, and hypnopompic if they occur on waking from sleep. These hallucinations are most commonly visual; however, other sensory modalities can also occur. For example, a common kinetic hallucination is of falling down an abyss [15]. While hallucinations can be seen in a large proportion of individuals with narcolepsy [16], they are also quite common in the general population, occurring in up to 39 % of individuals [15].

Another form of sleep related hallucinations are complex nocturnal visual hallucinations that generally occur when an individual awakens during the night. They are visual in nature, and individuals report distorted images of people or animals; the individual often has impaired insight into the nature of the hallucination [17]. Complex visual hallucinations may be idiopathic or associated with other diseases of the central nervous system, in which case the hallucinations may not be limited to the nighttime [17]. Associated disorders include alpha-synucleinopathies (dementia with Lewy bodies, Parkinson disease) as well as in the setting of severe vision loss, such as Charles Bonnet Syndrome.

Sleep Related Eating Disorder

Sleep related eating disorder consists of recurrent episodes of uncontrollable eating and drinking during the night [1]. Individuals may have full awareness during the episode, or they may occur in the setting of a confusional awakening after which the patient goes back to sleep with impaired recollection the next morning [18]. Individuals usually report an uncontrollable drive to eat rather than hunger as the force behind their behavior and preferentially seek out high calorie items. Adverse effects can come from the ingestion of toxic or non-food items, injuries from getting up to seek food at night or from performing dangerous activities while cooking food [18]. Other consequences can include daytime fatigue from frequent awakenings, weight gain, and morning anorexia. This parasomnia often has a chronic course.

Sleep Enuresis

Sleep enuresis is defined in the ICSD-2 as recurrent involuntary voiding of urine during sleep at least twice per week for a minimum of three consecutive months. The individual must be at least 5 years of age [1]. A distinction is made between incontinence, which is an uncontrolled leakage of urine, and enuresis, which is intermittent incontinence restricted to sleep. Classification of this disorder can also be primary, in which the individual has never had a period of dry sleep, versus secondary, in which a child has developed a period of at least 6 months in which they have slept through the night without enuresis but later develop nocturnal enuresis.

Parasomnia Due to Drug or Substance

The ICSD-2 lays out principles for the diagnosis of parasomnia due to drug or substance [1]. There must be a close association between exposure and onset of the parasomnia. The parasomnia can either be a new parasomnia for the individual or a worsening of or re-emergence of a previously diagnosed parasomnia. The parasomnias most commonly associated with substances are the disorders of arousal, sleep-related eating disorder, and RSD. Implicated medications include neuroleptics, antidepressants, benzodiazepines, non-benzodiazepine hypnotics, and alcohol. It should be noted, however, that for most medications, careful study of their relationship to sleep architecture and parasomnias has not been undertaken.

Parasomnia Due to Medical Condition

Parasomnias within this category emerge as a manifestation of an underlying neurological or medical condition [1]. These can be further separated into two distinct categories—disorders of sleep that occur in association with other conditions (such as RSD seen in Parkinson disease) versus symptoms arising from a separate organ system that manifest preferentially during sleep (such as nocturnal frontal lobe seizures, or nighttime gastroesophageal reflux).

Conclusion

The parasomnias encompass a heterogeneous group of undesirable events occurring during or around sleep, including unusual behaviors, emotional experiences, and abnormal perceptions. The current classification scheme seeks to first differentiate these disorders by the predominant stage of sleep in which they arise, however, there is clearly a significant set of parasomnias that can arise from either sleep state and defy classification into either the NREM or REM parasomnia category. As further work is done clarifying the pathophysiology of the various parasomnias, further changes in the parasomnia classification are to be expected.

Practical Points

- Parasomnias are “undesirable physical events or experiences” that occur during sleep itself or during transition into or arousal out of sleep.
- The ICSD-2 classifies parasomnias based upon whether they predominantly occur during REM sleep, during NREM sleep, or independent of sleep stage.
- NREM parasomnias consist of disorders of arousal and disorders of sleep–wake transition and generally occur in the first half of the night.
- NREM parasomnias include confusional arousals, sleepwalking (including sleep sex), and sleep terrors.
- REM parasomnias generally occur in the latter third of the night. These include REM sleep behavior disorder, recurrent isolated sleep paralysis, and nightmare disorder.
- Other parasomnias not restricted to a particular sleep stage include sleep related dissociative disorder, sleep related groaning (catathenia), exploding head syndrome, sleep related hallucinations, sleep related eating disorder, and sleep enuresis.
- Also included in this category are parasomnias due to drugs or substances, and parasomnias due to medical conditions.

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