Parasomnias in Children

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Abstract

The International Classification of Sleep Disorders (ICSD-3) defines parasomnias as "undesirable physical events or experiences that occur during entry into sleep, within sleep, or during arousal from sleep." The term parasomnia derives from the greek word para meaning around and the Latin somnus meaning sleep. Parasomnias in childhood are common, more often benign, self-limited and typically resolving in adolescence; they occur either in slow sleep (non-REM) or in paradoxical sleep (REM). To make a diagnosis, it is necessary to clearly identify their characteristics, first by a history as precise as possible and then, if necessary, by a video-polysomnography. Indeed, the differential diagnosis with other events, including epilepsy, is essential. Polysomnography is not always sufficient for the diagnosis and video polysomnography may be indicated to assist in the definition of parasomnias or other sleep disruption, especially when it is not possible for the clinician to identify the etiology of the motor activity in sleep. Misdiagnosis should be avoided and appropriate treatment chosen, if necessary. In this article, we will only review the most common NREM and REM sleep parasomnias in pediatrics; other parasomnias, such as enuresis, will not be discussed. We will attempt to describe their characteristics, pathophysiology and triggering factors, as well as their management.

Introduction

Parasomnias are physical events - or unwanted experiences that occur during sleep (slow or paradoxical), or during sleep-wake transitions (when falling asleep or waking up). According to the 2014 International Classification of Sleep Pathology (ICSD3), parasomnias are classified according to the time of their appearance during sleep (Table1). They can be motor (the subject moves), verbal (he speaks) or sensory (emotions, perceptions, dreams) (1). Most parasomnias occur almost exclusively in childhood and become pathological during this period only if they are too frequent.

Table 1 : Parasomnias categorized according to the International Classification of Sleep Disorders 3rd edition.

I . Disorders of arousals (NREM parasomnias)
- Confusional Arousals
- Sleepwalking
- Night Terrors
- (Sleep Food Disorder)

II. Parasomnias associated with REM sleep
- REM Sleep Behavioural Disorder (RBD)
- Recurrent Isolated Sleep Paralysis
- Nightmare Disease (or disorder)

III. Other parasomnias
- Exploding Head syndrome
- Sleep-related hallucinations
- Sleep enuresis
- Parasomnia due to medical conditions
- Parasomnia due to drug or substance
- Parasomnia, unspecified

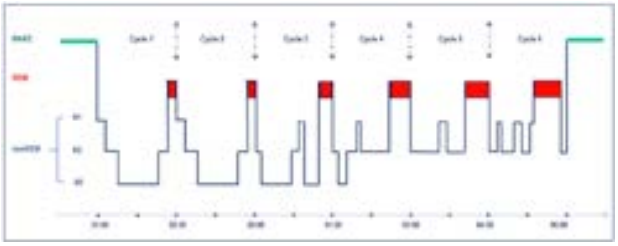
IV. Isolated symptoms and normal Variants
- Somniloquy (sleep talking)

The state of human consciousness is broken down into three stages: awakening - slow wave sleep (SWS) or non-rapid eye movement (NREM) sleep – rapid eye movement (REM) sleep. The process of the appearance of these different states is modulated by a multitude of factors at the level of our central nervous system (CNS) which receives and decodes all related stimuli, internal or external, via very complex neural and neurochemical circuits between the brainstem, the thalamus and the cortex. The method of study of these stages is done classically by the electroencephalography (EEG) which is the reference tool for functional exploration of cortical and subcortical activities. Each stage of consciousness has its own characteristics that allow us to identify them (1).

Thanks to the homeostatic and circadian control of sleep and wakefulness, the process of onset of a particular sleep-wake state is expected and maintained in a stable and predictable manner throughout the 24 hours. A classic night consists of several cycles of sleep that follow one another. Each cycle lasts approximately 90 to 120 minutes. As the night progresses, very deep slow sleep (NREM sleep) decreases in favour of REM sleep (Figure 1).

NREM parasomnias are therefore more common in the first part of the night, while parasomnias of REM sleep are more common later in the night. This article will review the most common parasomnias in paediatrics - their classification, epidemiology, clinical characteristics - differential diagnoses to be considered - their evaluation and management.

Figure 1: *Classic hypnogram showing the succession of sleep cycles (about 90 min.). At the start of the night, sleep is dominated by the 3 stages of NREM sleep and in particular by slow-wave N3 deep sleep. Later, in the second part of the night, the incidence of REM sleep gradually increases.*



Evaluation and diagnosis

1. Description of the sleep disorder

The diagnosis of parasomnias is mostly based on clinical data and therefore detailed information on the events is necessary. Parents are the first source of information, but often they are unable to report the exact description of the events because they were asleep or because the event is often sudden, violent and can represent an intense emotional experience for them.

In view of this, it is very important to have a detailed parents /caregivers history regarding the characteristics of the events, with a description of the details of the movements and behaviours. To complete their descriptions, parents very often make a video with their smartphone which can be very helpful, even crucial in some cases.

2. Clinical examination

It is also essential to carry out a clinical / neurological examination in search of disorders likely to influence sleep (for example adenotonsillary hypertrophy, retro-micrognathia, other abnormalities of the face which may lead to disorders of sleep breathing). The presence of breathing disorders during sleep can reinforce the occurrence of parasomnias (2).

3. Questioning of parents / witnesses

1. At what time during the night do the events occur? How long after falling asleep? Does the episode also take place during naps? Were similar events observed during the days before?
2. What is their duration? (seconds, minutes, hours?)
3. What is the child's level of consciousness during the events? (is the child fully awake? does he recognize his parents? is he able to relate what is happening?)
4. Consequence of the intervention or efforts of the parents to console the child (do they worsen the episode?)
5. Recollection or complete amnesia of the event the next morning ?
6. Semiological description of the event: stereotypical complex motor movements? or semi-intentional behaviour?
7. Number (if any) of events per night?
8. Are there other sleep disorders at the same time : snoring, apnea?

I. NREM-SLEEP PARASOMNIAS or DISORDERS OF AROUSAL (DoAs)

NREM sleep is characterized by a cyclical synchronization of brain activity and an overall but heterogeneous decline in brain metabolism. Gradual synchronization of brain activity defines 3 stages of slow sleep (NREM sleep) : very light SWS, when falling asleep : N1, light SWS (with sleep fuses or spindles) : N2, and deep SWS : N3. DoAs include Sleep terrors, confusional arousals and sleepwalking which are very common disorders in children. Sleep-related eating disorders are only seen in adults, and will not be detailed in this article.

Common features

Those parasomnias correspond to a phenomenon of partial awakening in the deep SWS (N3) (80%), but sometimes in N2 (20 %) (3,4). In fact, one could say that the musculoskeletal system and the autonomic nervous system activate themselves when the brain is still sleeping. Cognitive abilities are greatly impaired or even non-existent, while motor skills, for the most part, are maintained. The subjects therefore have a very altered perception of the environment, and are difficult to wake up during the event (especially not to provoke!). Activation of the autonomic nervous system, semi-automatic behaviour, varying degrees of confusion, disorientation and amnesia of the facts are characteristic (Table 2).

a. Time of occurrence

Because of the association with slow wave sleep, NREM parasomnias (DoAs) tend to arise during the first third (or even the first half) of the night, when SWS is most important. They can occur during other times when deep slow sleep is increased, such as during recovery sleep after sleep deprivation, and rarely during a daytime nap.

Table 2 : Common features of NREM parasomnias

Characteristics	Confusional arousals	Sleepwalking	Night terrors
Age (years)	2-10	4-12	1,5 -10
Family history	++	+++	++
Onset	First part of the night (often 1 to 3 hours after falling asleep)		
Agitation	Poor/mild	Poor/mild	marked
Autonomic activity	Low	Low	High
Behaviour	automatic behaviour but not stereotypical - seem haggard - cognitive functioning minimal or absent		
	Sitting in bed Sometimes talking or moaning	Walking around Unresponsive to verbal orders	Screaming – agitation flushed face - sweating reject potential interveners
Amnesia the next day	++	++	++
Contributing factors	Stress, fever, anxiety, sleep deprivation, irregular sleep schedules …		

b. Epidemiology

No gender difference has been reported in sleepwalking, sleep terrors or confusional arousals. DoAs are common in childhood in preschool children (3 to 6 years of age) : sleepwalking 14.5%, sleep terrors 39.8% and in 14.4% of preadolescent children (5,6). A Quebec study, carried out over 12 years, studied the prevalence of sleep terrors and sleepwalking from 18 months to 13 years. For sleep terrors, the prevalence, was 34.5% at 18 months, rapidly decreased to 13.4% at the age of 5 and gradually decreased to 5.3% at 13 years.

Sleepwalking generally appears a little later in childhood (2.5 years), with a peak of prevalence (13%) at 10-13 years (7). Confusional arousals occur in 17.3% of children 3–13 years of age ; the prevalence drops to 6.9 % in those more than 15 years and to 2.9%–4.2% in adults (8,9). Arousal disorders can persist into adulthood, but their frequency is much lower.

c. Pathophysiology

The high prevalence of arousal disorders in childhood is well recognized. This specific parasomnia-child link depends on certain ontogenetic characteristics of sleep: the importance of deep slow sleep that increases significantly between the first and the tenth year of life, the immaturity of transitions from one state of alertness to another, or the immaturity of certain functions, such as bladder control in the case of enuresis. Even minor changes in the child's habits may lead to desynchronization of its normal rhythms and cause internal arousal stimuli, occurring at "the wrong time", cause an incomplete arousal from very deep sleep. As development continues, these mechanisms mature, synchronization occurs, and the symptoms resolve, unless an underlying pathology, such as sleep apnea, exists (10). The decrease in these parasomnias of NREM sleep in adolescence is linked to the physiological decrease in the amount of SWS at night with aging. This decrease in slow sleep and slow wave activity (delta, ~ 0.5–4.5 Hz) is secondary to underlying changes in the structure and organization of the brain; it is the decrease in synaptic density that probably results in the reduction of high amplitude slow waves (11,12).

The activation of the serotonergic system is partially responsible for arousal and is involved in triggering motor activity. In NREM parasomnias the abnormal excitability of the serotonergic system exists, which, when activated independent of other neurotransmitters involved in arousal, results in motor behaviours but incomplete arousal (10,13).

c.1. Genetic factors

Many factors can influence the mechanisms by which parasomnias arise and are clinically expressed. Genetic predisposition plays a very important role in DoAs, specifically in sleepwalking. The prevalence of childhood sleepwalking: 22.5% for children without a parental history of sleepwalking, 47.4% for

children who had 1 parent with a history of sleepwalking, and 61.5% in those with two affected parents (7). Population-based studies of monozygotic and dizygotic twins suggest that genetic factors are involved in 65 % of cases of sleepwalking (14). A family study, carried out by a Franco-Swiss team, found a positive association between the HLA-DQB1 * 05 subtype and sleepwalking, suggesting a possible additional interaction between the immune system and sleep (15).

c.2. Favouring / precipitating factors

Besides genetic influence, there are several contributing / triggering factors of parasomnias, such as age, sleep deprivation (which causes a rebound in SWS), irregular sleep schedule, fever, occurrence of stressful events, such as family conflicts, separation anxiety, problems related to work or school and changes in the sleeping environment (for children: moving, changing rooms, etc.) (5,16). DoAs can also be triggered by environmental stimuli such as phone calls, text messages, pagers, messages from electronic devices, and several other stimuli (1).

Other sleep disorders (hypersomnia, insomnia, circadian rhythm disturbances) and intrinsic sleep disorders (obstructive sleep apnoea syndrome (OSAS) and periodic limb movements during sleep (PLMS)) can trigger parasomnias that can disappear after their treatment (2).On the contrary, infantile psychopathology is not frequently associated with parasomnias (17). There are other co-morbid factors: migraine, hyperthyroidism, head trauma, use of certain drugs (e.g. neuroleptics, sedative hypnotics, stimulants, antihistamines, etc.) and consumption and abuse of coffee or alcohol.

Clinical features

The three clinical entities (confusional arousals, sleepwalking, and sleep terrors) have common characteristics such that they could represent 3 clinical variants of the same pathophysiological entity (18).

Confusional arousals

These are characterized by sudden arousal with disorientation, confusion, movements and moaning, sometimes associated with semi-purposeful behaviours like calling out (screaming), crying or thrashing. The subject, who sleeps peacefully, suddenly sits up in his bed, but does not ambulate away, does not walk around the room; he looks around confusedly, his eyes haggard. They typically occur in the first part of the night, but can also occur later in the night or even in daytime naps. The events may be brief, lasting 1 or 2 minutes or longer (19,20). Some forms of confusional arousals can evolve into sleepwalking in adolescence. The differential diagnosis includes nocturnal partial seizures, which could trigger or mimic confusional arousal, sleepwalking and sleep terrors, and also REM sleep behaviour disorders (Table 3).

Somnambulism or sleepwalking

Somnambulism is defined as "a series of complex behaviours that are usually initiated during arousal from slow wave sleep and culminate in walking around with an altered state of consciousness" (1). It most often occurs in the first third or the first half of the sleep period, usually during SWS (N3) at the end of the first or second sleep cycle.

Sleepwalking can start as soon as a child is able to walk, but may start at almost any point in the life cycle. It usually goes away on its own around puberty but can persist into adulthood. Episodes occur with varying frequency (once to several times per week or per month), but usually once per night; however, more rarely, several episodes per night have been reported.

Sleepwalking attacks can be calm or restless with varying degrees of complexity and duration (21). Patients often start by sitting in bed and looking around in a confused manner with haggard eyes before getting up and walking, but sometimes may immediately leave the room, walk or run, or get out of the house, talk (often absurdly), dress, eat and drink. They also may exhibit absurd or abnormal behaviours (urinating in a trash can, rearranging furniture, or climbing out a window.). It can be dangerous to try to wake a sleepwalker, he can have an "escape reflex": either he can flee and risk being injured, or behave violently or aggressively against the observers who try to wake him up, hold him back or redirect. Violent features are more common in men (9).

The agitated form of sleepwalking occurs more often in the older child. The episodes may last from a few minutes to more than half an hour, and usually end with the patient returning to bed, lying down and continuing to sleep. There is usually amnesia for the episode. Affected individuals usually find their way through familiar environments but are prone to falls and injuries. These patients may exhibit a high tolerance for pain, such as burns or lacerations that may not awaken them. The frequency is highly variable, ranging from an isolated occurrence to several per night. There is a reported association between higher sleepwalking frequency and earlier age of onset (22).

Sometimes it is difficult to distinguish restless sleepwalking from sleep terror, as both conditions can manifest as screaming, bed hopping and running, and violence. However, in sleepwalking there is usually no autonomic activation or expression of fear. The eyes are often open with a confused "glassy" gaze, while in behavioural disorders in REM sleep, the eyes are generally closed.

Sleep terrors

Sleep terrors are distinguished from other DoAs by their prominent autonomic activation. Events are characterized by vocalizations such as screaming, with associated manifestations of terror and excessive sweating, tachycardia, tachypnoea, and mydriasis. Affected children appear agitated, usually

Table 3 : Comparison of paediatric parasomnias and nocturnal seizures

Characteristics	Conf. arousals	Sleepwalking	Night terrors	Nightmares	Seizures
Age (years)	2-10	4-12	1,5-10	3-10	Any age
Timing during sleep	1st third (or half)			2nd half	any
Number/night (average)	≥1	1	1	≤ 1	>> 1
EEG states	N3 (N2) NREM			REM	any
EEG abnormalities	No			No	Yes
Episode duration	2-30 min.		1-10 min.	-	< 1 min.
Behaviour (video) Autonomic activation Agitation	Moderate Moderate	None/mild None/mild	Marked Severe	Mild (before awake)	Variable Variable
Movement semiology	Variable complexity- not highly stereotyped (on video)			-	stereotypic
Confusion	+	+	+	No	+
Mental content	Poor or absent			rich, elaborate, scripted	rarely present
Reassurance (effect of)	No	No	No	Good	No
Family history	Yes			No	Rare
Clinical evolution	Trends to disappear with age (teenager)			Variable	Often stable

According to Mason (3), Derry (10) Stores (20).

sit up in their bed and are unresponsive to external stimuli, may exhibit prolonged inconsolability without awareness and, like confusional arousals, the behavioural manifestations typically take place while sitting up in bed. Episodes typically last several minutes and are followed by the individual calmly and quietly returning to sleep (9). The episodes emerge in the first third of the sleep period (first part of the night) and may last up to 10 minutes or longer. Typically, they do not remember the events and do not report dreams or nightmares but might have a vague sense of frightening images. One of the main problems of the disorders of arousal is to differentiate them from nocturnal complex partial seizures or frontal lobe seizures (Table 3).

Management and therapy

The treatment of disorders of arousals in NREM involves first reassuring parents that parasomnias are common in childhood and can be effectively managed (3). A comprehensive explanation of the nature of these parasomnias and reassurance that the children are mentally and developmentally normal should be provided (23). First and foremost, the most important care is to remove the noisy and disturbing environment, the sources of stress, recognized as triggers of parasomnias and treat any sleep disorders such as obstructive sleep apnea (OSA) (2). A period of quiet activity or relaxation techniques should be instituted before bedtime (23).

General guidelines for the management of these DoAs include education, prophylaxis, safety precautions, and clear and specific intervention instructions for parents / witnesses (Table 4). Specific treatment approaches include early arousal, psychotherapy, hypnosis, and pharmacotherapy (9).

Table 4 : NREM parasomnia management.

Parents information first !	**Prophylaxis measures**
· Reassure and explain parasomnia · Usually benign, self-limited · Genetic predisposition · No association with psychiatric condition * · Safety is one key in treatment	· Avoid sleep deprivation · Avoid stress factors · Avoid stimulation (emotional or physical) before bedtime · Avoid caffeinated drinks ** · Practice good sleep hygiene · Prevent environmental stimulation (i.e., light, sound, beeper smartphone, touch) · Treat co-morbid factors (OSA ,GERD, pain..) · Minimize medications (including psycho-tropic drugs)
* in adults only	** and alcohol in teenagers
Safety measures	**Parents/Bystander guidelines**
· Remove potentially dangerous items near the bed · Lock doors and windows · Security alarm to alert family members if the subject leaves his room · Stairwell gates and night light to prevent falls / injuries	· Observe in silence · Allow the subject to move and follow him · Don't wake him up · Intervene only to avoid injury · Avoid physically restraining the patient - this could cause violent behaviour or an escape reflex

General guidelines

1. Safety measures, important to advise parents are: place the mattress on the floor, secure windows and exterior doors, use alarm systems and bells informing parents that the child is leaving his room. It is very important to inform the parents not to try restraining or awakening the child during an episode because this might worsen (escape reflex and risk of injury) or prolong it.

2. Education – prophylaxis : It is also imperative to remember the rules of sleep hygiene, and the importance of a regular sleep schedule that avoids sleep deprivation. To do this, we can ask parents (and children) to keep a sleep diary, to become aware of the child's real sleep schedule and time; this can help them reduce sleep deprivation and therefore also reduce the frequency and duration of parasomnias. Caffeine or theine- containing beverages must be eliminated because they may contribute to decrease sleep efficiency and may predispose to the episode. It is also very important to inform parents not to try to restrain or wake the child during an episode as this could make it worse (escape reflex and risk of injury) or prolong it. As the child usually has no recollection of the episode, then there is no point in telling him the next day, as this can promote anxiety.

3. Specific treatment approaches

*3.a. The behavioural method of "programmed awakenings"***:** may be useful only in children whose parasomnias occur frequently and at a predictable time, and also before parents go to bed (3,24).

Parents should keep a diary of when episodes occurred for about 2-3 weeks to determine the average time these episodes occur. Then they will need to wake the child up every night about 15 to 30 minutes before their usual parasomnia time for about a month - and make sure to wake the child up for about 5 minutes before letting him go back to sleep. The cessation of episodes is maintained even after the cessation of forced arousals (Table 5).

Table 5 : Method of programmed awakening in the treatment of somnambulism and sleep terrors.

1.	Keep a diary of when episodes started for about three weeks (increase this period if episodes are infrequent).
2.	Establish the average time of onset of episodes.
3.	Wake the child up every night 15 to 30 minutes before the average time of onset of episodes for a period of about a month.
4.	Make sure the child is awake for about five minutes and let him fall back to sleep.

According to Petit D. and Zadra A. (24)

3.b. psychotherapy – hypnosis - relaxation

Other non-pharmacological interventions such as hypnosis, relaxation and psychotherapy have been proposed for the treatment of DoAs ,with controversial results (4). Some studies (adult patients) have shown a complete disappearance or a very great improvement in 45% of patients after one month of hypnotherapy but little evolution afterwards. One or two hypnotherapy sessions could therefore be useful as a first-line treatment for patients with certain types of parasomnias (25).

3.c. Drug treatment, often reserved for adults

Drug therapy is only indicated when parasomnias are frequent, prolonged and / or causing injury to patients. Benzodiazepines are often effective: low dose clonazepam, starting with 0.25 mg one hour before bedtime, increasing slowly if necessary (watch out for possible daytime sedation). Generally 3–6 weeks of treatment may be curative for a long time (21). However, in children the use of psychotropic drugs is generally not recommended because: a) they are thought to mask the symptoms rather than to treat the causes of partial arousals; b) the drug-induced decrease in slow-wave sleep might have detrimental effects; c) tolerance and rebound effects occur frequently and cause severe increase in parasomnias (19).

3.d. L-5-hydroxytryptophan (L-5-HT)

According to a physiopathological hypothesis (put forward by Jacobs in 1992), DoAs could be due to a conflict between the mechanism which induces slow sleep and that which causes wakefulness, via a dysfunction of the serotoninergic system. Based on this hypothesis, the administration of L-5-hydroxytryptophan (L-5-HTP), a precursor of serotonin and capable of increasing the levels of cerebral serotonin, could exert beneficial effects on the disorders of arousal such as sleep terrors (26).

II . PARASOMNIAS associated with REM sleep

REM sleep behaviour disorder, sleep paralysis and hypnagogic hallucinations are reported in adults but very rare in children. When present in childhood, sleep paralysis and hypnagogic hallucinations are classically associated with narcolepsy, but can occur in very rare cases of familial sleep paralysis or sporadically with a rebound in REM sleep. The most well-known REM sleep disorder in children is, of course, the nightmare.

REM sleep behaviour disorder (RBD)

RBD is characterized by the loss of the physiological atony characteristic of

REM sleep; on the contrary, there is an increase in phasic muscle activity in REM, resulting in the acting out of dream content. These patients have complex movements that can be vigorous and even violent, may injure themselves or the bed-partner by punching, grabbing or kicking. Episodes seem to occur more often during the first phase of REM sleep at night (23).

Childhood RBD is very rare and appears to occur in children: 1. who have narcolepsy or sometimes idiopathic hypersomnia, 2. who have received pharmacological agents that increase muscle tone during REM sleep, such as selective serotonin reuptake inhibitors (SSRI) antidepressants drugs, or 3. who suffer from neurodevelopmental disorders or brainstem abnormalities such as autism, Smith-Magenis syndrome, Moebius syndrome, Chiari malformations, and midline tumours. In the short term, in the paediatric population, it seems to be modestly responsive to low dose benzodiazepines (clonazepam 0.125 to 0.25 mg) or melatonin (27).

Polysomnographic studies with multiple electromyography (EMG) channels are essential for the diagnosis, in order to demonstrate the loss of muscle atonia . There is an intermittent loss of REM atony with an excessive phasic muscle contraction activity of EMGs (submental - upper or lower limb) during REM sleep (28).

Recurrent isolated sleep paralysis

Recurrent isolated sleep paralysis (RISP) not occurring in association with narcolepsy is defined as isolated sleep paralysis. It characterized by a transient inability to perform voluntary movements when falling asleep (hypnagogic) or upon awakening (hypnopompic): the patient is unable to speak or move limbs, trunk and head. Breathing is usually affected. Consciousness is preserved, and the memory is complete. Each episode lasts seconds to a few minutes and causes clinically significant distress, including bedtime anxiety or fear of sleep. It usually goes away spontaneously, but can be interrupted by sensory stimulation (tactile or sound) or when the person quickly moves its eyes or makes intense efforts to move its limbs or body (29,30).

The pathogenesis of this disorder is linked to the persistence of REM atonia into wakefulness : normal mental activity occurs in the presence of body paralysis ! Severe anxiety is usually present, at least during the first few episodes. In EEG polysomnography (PSG), there is a typical sequence, with the intrusion of an alpha EEG rhythm in REM sleep, followed by an arousal response, then the persistence of REM atony in the waking state.

RISP may be accompanied, in approximately 25% to 75% of patients, by very intense and vivid hallucinations, auditory, visual, tactile or a sense of presence in the room. These paralyzes are rare in children (apart from narcolepsy) and do not often occur before adolescence but always in young people (generally less than 30 years old). Some studies report a prevalence of at least one episode of sleep paralysis in 15 to 40% of the general population, while recurrence is less common.

Support - treatment. First-line treatment is reassurance that the episodes are benign**.** Apart from narcolepsy, in healthy patients, the main contributing factors are sleep deprivation, irregular sleep-wake schedules and jet lag. The most effective therapy is to avoid these factors (29).

Nightmare disorder

Nightmare disorder is characterized by repeated nightmares, which are most often frightening dreams that usually involve threats to survival, security, or physical integrity, and usually wake the sleeper up. They usually involve negative experiences such as anxiety, fear, terror but also anger, rage, embarrassment, so the children may appear anxious after awakening but can detail the nightmare's contents (23,29,30).

Occasional nightmares are common in children, ranging from 60% to 75%, but the prevalence of nightmare disorder is estimated to be 1.8% to 6%. Typically nightmares start between the ages of 2.5 and 6 years, with a peak around 6 to 10 years and decreases thereafter. In children aged 3 to 5 years, it is reported that 10–50 % have nightmares severe enough to disturb their parents, without gender differences. However, adolescent and adult females report these episodes more frequently (31).

Anxiety or psychiatric disorders are more frequent in children with nightmares than without. Exposure to violent content in video games or television programs can contribute to nightmares and should be avoided as part of routine sleep hygiene and bedtime education. Monsters or other fantastic images often characterize the dreams of young children, while adolescents may experience more realistic images related to daytime stressors or traumatic events. Nightmare disorder can also be a specific marker of post-traumatic stress disorder (PTSD) or a history of sexual abuse or maltreatment in children and adolescents (3,32).

Support - treatment In the case of simple, ordinary nightmares, the child should be listened to and reassured so that he can fall back to sleep peacefully. Cases of psychological distress and cases of psychological or physical abuse require appropriate and psychotherapeutic care. For the treatment of repeated nightmares, the most effective method in children is mental imagery rehearsal therapy (IRT), which has been adapted from that used in adults. In this cognitive-behavioural approach, the child having nightmares learns to modify the content of their bad dream as they wish and mentally (or by drawing) revise it at certain times of the day or week. Results from recent clinical studies in children show a decrease in the frequency of nightmares and associated distress (24,33).

Conclusions

Childhood parasomnias are common, mostly benign and self-limited in time. Their assessment should begin with a full history, careful listening (attention to psychological suffering and possible abuse of children) and a physical examination; this is often enough for the clinician to identify the problem. In some cases, however, the clinician must resort to video-PSG-EEG to identify the exact aetiology of motor activity during sleep and to differentiate a common parasomnia from sleep-related seizures. These PSG recordings may also be needed to identify certain precipitating factors for parasomnias, such as obstructive sleep apnea syndrome or the presence of PLMS for example, the treatment of which can really help reduce or resolve parasomnias. Neglecting the care of these parasomnias can have serious consequences for children; fortunately, most of them respond favourably to behavioural methods.

Conflict of interest

The author has no conflict of interest to declare.

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