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A guide to parasomnias

Parasomnias are relatively common. Most can be successfully managed, if necessary with pharmacotherapy.

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What are parasomnias?

Parasomnias are a group of sleep related behavioural abnormalities characterised by dissociation of the three principal states of being (wake, non-REM sleep and REM sleep). Simultaneous or quickly alternating features of at least two of these states occur. This results in a mixed state of being in which the brain is simultaneously awake enough to perform very complex and often protracted motor or verbal actions, but asleep enough not to have full conscious awareness or responsibility for these actions.

Parasomnias may be problematic for patients, their partners and families, and occasionally for the wider community. Many GPs will be familiar with the more common parasomnias, such as sleep walking in childhood. However, other parasomnias are so bizarre that their description defies belief (e.g. violent and even homicidal behaviour during sleep) and are so uncommon that many GPs will encounter them only once in a lifetime or not at all.

Understanding of parasomnias has improved as the field of sleep medicine has developed scientifically, particularly with the advent of methods for defining sleep physiologically, such as the continuous sleep electroencephalogram and polysomnogram (PSG). The stages of sleep are described in the box on page 39. However, although we have a better grasp of behavioural and other aspects of many of the parasomnias, the genetic and environmental aetiology, molecular and neurochemical basis, and optimal treatments of these conditions have yet to be completely defined.

Classification

The parasomnias have recently been reclassified by the American Sleep Disorder Association (see *International Classification of Sleep Disorders*, 2nd edition).[1] Briefly, three subgroups were identified:

- disorders of arousal from non-REM sleep – i.e. confusional arousals, sleep walking and sleep terrors

IN SUMMARY

- **Many of the parasomnias have distinguishing features that can be gleaned from the clinical history and occasionally from the physical examination and investigative studies.**
- **It may be necessary to differentiate parasomnias from each other and from sleep related epilepsy.**
- **Specialist investigation may be required in some circumstances, such as when sleep behaviours are complicated, injurious or threatening, and sometimes in medicolegal circumstances.**
- **For straightforward cases of sleep walking in childhood, providing explanation and reassurance may be all that is necessary.**
- **Simple safety precautions should be advised when parasomnia behaviour is potentially harmful.**
- **Most parasomnias will respond favourably to pharmacotherapy, if required.**

Stages of sleep*

Sleep can be classified into five stages, which occur in a characteristic and somewhat cyclical fashion throughout the sleep period.

Stage 1
Very light sleep, the transition stage from wakefulness

Stage 2
Light sleep, approximately 50% of the normal sleep period

Stage 3, stage 4
Deep sleep or slow wave sleep, occurs predominantly in the first half of the sleep period

Rapid eye movement (REM) stage
Sleep that occurs mostly in the later sleep cycles of the sleep period, associated with marked muscle relaxation and with dreaming

* Non-REM sleep is comprised of a combination of sleep in stages 1 to 4.

- parasomnias usually associated with REM sleep, such as REM sleep behaviour disorder, recurrent isolated sleep paralysis, nightmare disorder
- other parasomnias, such as sleep enuresis, sleep related eating disorder, sleep related dissociative disorders, sleep related groaning (catathrenia), exploding head syndrome (that is, an imagined loud noise that seems like an explosion in the head).

This article focuses on the more common parasomnias encountered in clinical practice – that is, the disorders of arousal from non-REM sleep and REM sleep behaviour disorder. Sleep enuresis and sleep related eating disorder are two unusual variants that are briefly described. Restless legs syndrome is not classified as a parasomnia and is not discussed in this article. Normal phenomena such as sleep starts (also known as hypnic jerks: sudden and brief muscular contractions of the limbs or body at sleep onset) sometimes need to be distinguished from parasomnias and movement disorders of sleep.

Diagnosis

Many of the parasomnias have distinguishing features that can be gleaned from the clinical history and occasionally from the physical examination and investigative studies. Taken together, these enable an accurate diagnosis in most cases. It may be necessary to differentiate parasomnias from each other and from sleep related epilepsy; useful differences are outlined in Table 1.

Disorders of arousal

Disorders of arousal from non-REM sleep have some common features and may form part of a spectrum of continuity. Confusional arousals, sleep walking and sleep terrors sometimes occur over time or contemporaneously in the same individual. They may also occur in some permutation within a family kindred, and there is growing evidence that sleep walking and some other parasomnias have a genetic predisposition. In children, estimates of the prevalence of sleep walking range from 1 to 17%. In adults, the prevalence of sleep walking is estimated to be about 4%, as is the adult prevalence of confusional arousals and sleep terrors.

Clinical features of non-REM parasomnias are outlined in Table 1. Some very unusual cases of sleep walking and sleep terrors involve prolonged elaborated behaviours that can have a violent or sexual theme.

Results from PSG studies clearly show that arousal parasomnias are characterised by sudden transitions from slow wave sleep, with manifestation

continued

Table 1. Clinical features of common parasomnias

	Confusional arousals	Sleep terrors	Sleepwalking	Nightmares	REM sleep behaviour disorder	Complex partial epileptic seizures
Time of night	Early	Early	Early to middle	Late	Late	Any
Sleep stage at onset	Slow wave sleep	Slow wave sleep	Slow wave sleep	REM sleep	Dissociated REM sleep	Any
EEG discharges	No	No	No	No	No	Usual
Screams	No	Yes	No	Rare	Rare	Rare
CNS activation	Minimal	Extreme	Minimal	Mild	Mild	Mild
Myoclonus	No	No	No	Rare	Common	Rare
Walking	No	No	Yes	No	Rare	Common
Returns to bed	Stays	Stays	Usual	Stays	Unusual	Unusual
Awakens	Uncommon	Uncommon	Uncommon	Common	Common	Common
Duration	0.5 to 10 minutes	1 to 10 minutes	2 to 30 minutes	3 to 20 minutes	1 to 10 minutes	5 to 15 minutes
Confusion afterwards	Usual	Usual	Usual	Very rare	Rare	Usual
Reduced in sleep laboratory	Yes	Yes	Yes	No	No	No
Episodes when awake	No	No	No	No	No	Usual
Age	Children	Children	Children	Adults	Adults	Adults
Genetic transmission	Yes	Yes	Yes	No	No	Rare
Organic CNS lesion	No	No	No	No	Common	Common

of abnormal motor or autonomic behaviour occurring in a non-wake state. However, obtaining electrophysiological and video documentation of non-REM parasomnia events in the sleep laboratory is problematic. Various approaches, such as using auditory or other provocation during slow wave sleep, have been tried with only modest success to induce the abnormal sleep behaviours. Recently, some laboratories have developed a sleep-deprivation schedule to be used prior to overnight PSG that may more reliably induce parasomnia behaviour.

Although it is not a routine investigation for all cases of suspected parasomnias, PSG or video documentation might be desirable in some circumstances. These include:

- complex, unusual or violent behaviours
- situations where sleep related epilepsy is an important differential diagnosis
- excessive daytime impairment (e.g. sleepiness), which may result from parasomnia
- medicolegal circumstances.

It is also appropriate when there is a need to exclude or diagnose associated sleep disorders (e.g. sleep-disordered breathing and periodic limb movements in sleep), as these can aggravate parasomnia and may require treatment in their own right.

Management

The management of disorders of arousal needs to be tailored to the patient's circumstances. For straightforward cases of sleep walking in childhood, providing

Table 2. Neurological conditions associated with REM sleep behaviour disorder

Parkinsonism
Dementia
Olivopontine cerebellar degeneration
Shy–Drager syndrome
Narcolepsy
Cerebrovascular disease
Multiple sclerosis
Astrocytoma
Alcohol abuse

explanation and reassurance may be all that is necessary – these problems often settle with the passage of time and increasing maturity of the children and their central nervous system. It is important to explain that the occurrence of a parasomnia such as sleep walking does not of itself imply a psychiatric disturbance. Simple precautions should be advised when parasomnia behaviour is potentially harmful. For example, a sleepwalker who has ready access to an elevated balcony should ensure the balcony door is locked before going to bed.

First line measures that may be helpful for patients with arousal disorders include:

- optimising sleep hygiene – e.g. reducing evening caffeine intake
- improving sleep–wake schedules (that is, regular retiring and arising times)
- avoiding sleep deprivation
- moderating use of alcohol and avoiding recreational drugs
- treating associated sleep disorders.

Ameliorating a febrile illness in a child may reduce the likelihood of sleep walking episodes provoked by fever.

Pharmacological therapy is sometimes required to help manage troublesome non-REM parasomnia. Treatment with the benzodiazepine clonazepam (Paxam, Rivotril), titrated for effect, is often successful; such treatment can be used as required and patients can take breaks from medication at appropriate times. Tricyclic antidepressants have also been used, although the side effect profile is less favourable.

Other agents (e.g. paroxetine and trazodone) have been found to be helpful in case reports. Nonpharmacological therapies such as hypnosis and anticipatory awakening in children may be useful in selected cases.

REM sleep behaviour disorder

REM sleep behaviour disorder is characterised by loss of normal muscle hypotonia associated with REM sleep or overactivation of phasic REM phenomenon, thus 'acting out' dreams. It is characterised by limb and body movements that are often violent (e.g. kicking) and may be associated with emotionally charged outbursts. Serious injury to the patient or bed partner may occur during these episodes, which typically occur one to four times per week and mainly in the early morning hours or second half of the night. The movements can be related to dream content, and when patients are awakened they will usually (but not always) remember the associated dream material. Patients rarely complain of sleep disruption, being more concerned with injury. The violent nocturnal behaviour is generally totally out of character for the daytime persona.

The prevalence of REM sleep behaviour disorder is unknown. Onset is usually after the age of 50 years, and a milder prodrome of sleep talking, simple limb jerking, or vividly violent dreams may precede the full-blown syndrome. Nearly 90% of sufferers are male. Approximately 60% of cases are associated with known neurological disease (see Table 2); the remaining 40% are idiopathic. The precise location of lesions that lead to the condition is not known, but animal experiments suggest the pedunculopontine nucleus could be critical in the pathophysiology. An acute form of the condition has been described on withdrawal of REM suppressants (e.g. tricyclic and reuptake inhibitor antidepressants). Alcohol dependent patients are at high risk of developing REM sleep behaviour disorder when alcohol is withdrawn.

The keys to diagnosing REM sleep behaviour disorder are a careful history in combination with PSG findings. As most patients do not have episodes every night, a PSG or video on a single night may not be revealing, so some sleep centres routinely perform three serial nocturnal sleep studies. Simultaneous video and sleep recordings (including both leg and arm electromyograms) are recommended. An episode is demonstrated by bursts of limb movement or persistent augmented chin and/or leg or arm electromyogram activity during REM sleep. Video recording usually shows REM related movements.

Management

Management with a benzodiazepine is usually successful, with up to 90% of patients with REM sleep behaviour disorder responding within a week of starting treatment. The agent that has been used in most studies is clonazepam, 0.5 to 2 mg taken two hours before going to sleep. Breakthrough attacks occasionally occur, so it is important to ensure that the bedroom environment is safe (e.g. by closing windows and doors) and that sleep hygiene is optimised. Sleep deprivation and excess intake of alcohol, caffeinated drinks and chocolate should be avoided.

Although use of tricyclic antidepressants can be associated with REM sleep behaviour disorder, paradoxically there have been case reports showing these agents to be beneficial as a treatment. This will usually be second-line therapy, especially considering the potential side effects of tricyclic antidepressants in elderly men, who are most commonly affected by REM sleep behaviour disorder. Other sleep disorders (e.g. sleep-disordered breathing and periodic limb movement

Sleep hygiene tips

Good sleep habits promote good sleep whereas adverse sleep habits can limit the chances of good sleep.

Do

Go to bed at the same time each day
Get up from bed at the same time each day
Get regular exercise each day
Try to spend some hours outdoors or in natural light during the daytime
Make the bedroom as restful as possible
Use your bed only for sleep and sex
Take any medications as directed
Be comfortable and relaxed in bed
Understand your personal sleep needs

Don't

Exercise just before going to bed
Engage in stimulating activity just before bed
Drink caffeine-containing drinks in the evening
Go to bed feeling too hungry or too full
Nap in the evening before you go to bed
Stay in bed if you are awake for prolonged periods (e.g. 20 to 30 minutes)
Share your bed with children or pets
Look at the clock all the time
Smoke
Use alcohol to help you sleep
Rely on sleeping tablets

disorder) may be seen in this age group, and treatment specific to the disorder may also be required.

Sleep enuresis

Sleep enuresis (nocturnal bedwetting) may be primary or secondary in aetiology and is conventionally not diagnosed in children under 5 years of age. Of all the parasomnias, it has the strongest evidence for a genetic element.

Management

Sleep enuresis has a significant annual spontaneous remission rate as patients mature. Tricyclic antidepressants and desmopressin (Minirin Nasal Spray and Tablets) are effective short term treatment options, but long term pharmacotherapy is not usually appropriate.

Sleep related eating disorder

Sleep related eating disorder can be thought of as an elaborated version of sleep walking, in which recurrent episodes of involuntary eating or drinking occur during the main sleep period and are associated with adverse consequences. These include consumption of unusual foods or inedible substances, insomnia related to the sleep disruption, sleep related injury or dangerous behaviour, morning anorexia and metabolic consequences (e.g. dysglycaemia). Sleep related eating disorder is often associated with another sleep disorder, such as sleep-disordered breathing or periodic limb movement disorder, and may be initiated in the context of major stress reactions. It needs to be distinguished from a number of other entities including night eating syndrome and Kleine–Levin syndrome.

Management

Psychological therapy can be helpful, and it is appropriate to secure food items or make these difficult to access during the night. Associated sleep disorders should be managed. A number of pharmacological agents have had reported success in small case series.

Conclusion

Parasomnias vary in their clinical significance and requirement for medical intervention. The more common types include arousal disorders from non-REM sleep and REM sleep behaviour disorder. Many parasomnias have distinguishing features that enable an accurate diagnosis in most cases. For many patients, explanation and reassurance form the cornerstones of good management and can be provided by the primary physician. Tips for sleep hygiene are outlined in the box on this page. Specialist investigation may be required when sleep behaviours are complicated, injurious or threatening, and sometimes in medicolegal circumstances. Sleep studies, in combination with the clinical history, are often helpful in confirming features of REM sleep behaviour disorder, and may elucidate coexisting sleep disorders that can promote or exacerbate parasomnia. When required, pharmacological options are available that will make life and sleep easier for affected patients and their partners and families. MT

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Further reading

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