PARASOMNIAS

Helen S Driver, Colin M Shapiro

Jacob's dream (from the Lambert Bible)

Parasomnias are a group of acute, undesirable, episodic physical phenomena that usually occur during sleep, or are exaggerated by sleep. They are characterised by partial arousals before, during, or after the event even though they occur during different stages of sleep and at different times during the night. Most parasomnias are precipitated or perpetuated by stress, and an interaction between biological (often not identified) and psychological factors is presumed in many. There are three different types: those that occur during slow wave sleep, rapid eye movement (REM) sleep, and any phase of sleep.

Parasomnias during slow wave sleep

Features of sleep walking and night terrors

- They occur primarily in the first third of sleep when slow wave sleep is most prominent
- Slow wave sleep is deep sleep: it is difficult to wake the patient
- Patients rarely remember specific details of the event
- Conditions in which there are higher levels of slow wave sleep tend to increase the frequency of these parasomnias (for example, sleep deprivation, shift work, and alcohol consumption)
- Medical disorders associated with these parasomnias include obstructive sleep apnoea syndrome, migraine, and epileptic seizures
- They are more common in children (the onset is usually before the age of 10 years). Children have more slow wave sleep than adults
- One person may have more than one form of parasomnia. There may be a common genetic and neurophysiological substrate in somnambulism and night terrors
- These parasomnias may occur in response to stress or anxiety and may be more common when sleep schedules are irregular

Slow wave sleep is non-REM sleep (stages 3 and 4), when δ waves predominate on the electroencephalogram. Somnambulism (sleep walking) and night terrors ("pavor nocturnus" in children and "incubus" in adults) are in this group, and seem to be "disorders of arousal." Patients who are disturbed rather than becoming fully awake during slow wave sleep enter a state of confusion and disorientation. Such patients seem to have a generalised, hypersynchronous, symmetrical δ pattern on the electroencephalogram, which precedes the parasomnia and persists during it, and may be an indicator of disturbed sleep.

Both somnambulism and night terrors are described as "immaturities of the central nervous system" in children, but are thought to be more indicative of psychopathology in adults.

Differences between nightmares and night terrors

	Nightmare	*Night terror*
Sleep stage	REM sleep	Non-REM sleep
Timing	Late in sleeping period	Often during first hour after onset of sleep
Recall	Usual	Usually absent
Behaviour during event	Quickly in contact with surroundings	Often "out of reach"
Family pattern	Not confined	Yes
Treatment	Clomipramine, psychotherapy	Sleep hygiene, benzodiazepines

Sleep walking

Recent studies have suggested that adult sleep walkers may have a distinctive personality profile. During sleep walking vision seems to remain intact; coordination of the central nervous system is maintained to some extent, although accidental injuries have been reported. An episode can last from minutes to an hour. More than one episode a night is rare, as is the likelihood of complex manoeuvres.

Coping with night terrors: a guide for parents

Normal sleep includes cycles of light sleep, deep sleep, and partial waking. Occasionally dreams, nightmares, and night terrors can disturb a child's sleep.

What are night terrors?

Night terrors are brief episodes (about 10-20 minutes) of partial waking that occur during deep sleep and are accompanied by thrashing, kicking, rolling movements, and unintelligible speech. The child does not respond to voice, touch, or reassurance. They are most common among children aged 2-6 years and usually occur within the first two hours of going to sleep.

Important facts about night terrors

(1) The child will not remember it in the morning
(2) Trying to wake the child during the night terror rarely shortens it
(3) The child is not ill
(4) Night terrors do not have any long term ill effects
(5) They often occur only once a night, and not every night. Usually they will decrease and disappear three to four months after they start
(6) Overtiredness and changes in routine will make them worse

What parents can do

(1) Stay calm during the night terror
(2) Restrain the child physically only to prevent self injury
(3) Place anything breakable out of reach. If necessary lock doors and windows
(4) Maintain the child's routine as far as possible, and encourage periods of rest after physical activity
(5) Reassure siblings that the terrors will do no harm and will go away
(6) Remember that the child will have no memory of the incident the next day
(7) Your reaction and that of siblings may upset the child who is having the night terrors; reassure the child
(8) Try to find out if the child is worried about anything, and see if you can help
(9) Consult your doctor if the type and frequency of night terrors changes, or if they occur for more than three months

Many patients with severe sleep walking tell doctors at specialist clinics that they have previously been "fobbed off." This is clinical negligence. It is particularly important that these patients are instructed to sleep in a safe environment. There should be bars on upstairs windows; stair gates, locks (possibly combination locks) on outside doors; and they should request rooms on the ground floor in hotels. They should be advised to avoid sleep deprivation (long drives at night, or shift work) or other circumstances that might make them excessively sleepy—for example, drinking alcohol before going to bed. Psychotherapy may benefit some adult sleep walkers.

Night terrors

Night terrors usually start with a terrifying scream, increased heart and respiratory rates, sweating, possibly a penile erection, and a frightened expression. They last from one to several minutes, and should be distinguished from nightmares.

Psychotherapy or hypnosis should be the first lines of treatment, particularly in children. Low doses of a benzodiazepine (for example, diazepam 2-10 mg before sleep) may help, but there is a high rate of relapse particularly at times of stress. A regular bedtime routine that permits sufficient sleep often leads to improvement in children. Many simple parasomnias improve with improved sleep hygiene, particularly decreased alcohol and caffeine consumption.

Parasomnias during REM sleep

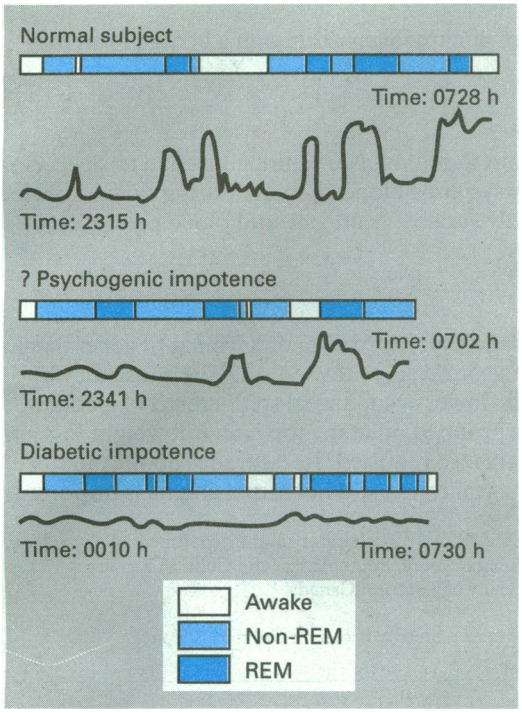
Comparison of sleep disorders in children

	Dreams	Nightmares	Sleepwalking	Night terrors
Sleep stage	Light non-REM and REM	REM	Stage 4 non-REM	Stage 4 non-REM sleep
Time after went to sleep (h)	3-6	3-6	1-2	1-2
Sounds	None	Occasional unintelligible sounds	Occasional meaningless speech	Screen ± continuous loud meaningless speech
Motor movement	Little or none	Little until point of waking	Usually purposeful and unpredictable; child rarely stays in bed or room	Purposeless movement; child usually stays in bed
Response to parent	Awakes easily to stimuli	Awakes easily to stimuli; reorients in several minutes	Little to none	Little to none
Memory of event	Can describe immediately	Can describe immediately; often able to remember event following day	None	None

Parasomnias during REM sleep occur during the middle and last third of sleep, when REM periods are more abundant and intense; patients arouse easily and quickly.

Dream anxiety attacks

Dream anxiety attacks or nightmares are frightening dreams with vivid recall. Often a quick motor reaction in the nightmare is played out which wakes the patient up. These attacks typically start during the late teens and correlate with increases in stress, depression, painful life events, insecurity, anxiety, and guilt; they are common among patients with post-traumatic stress disorder. Others causes include fever; abrupt stopping of drugs that suppress REM sleep such as amphetamines, many antidepressants, and benzodiazepines (particularly those with short half lives); and acute alcohol detoxification. These lead to a rebound/recoil in REM sleep which promotes nightmares. Treatment is with drugs that suppress REM sleep (clomipramine is probably the most useful) and psychotherapy is occasionally beneficial. Children need support and comfort. Environmental factors such as horror films may be important triggers.



Tracings show strain gauge measurements of erectile function, which increases during REM sleep.

Sleep related cluster headaches and chronic paroxysmal hemicrania

These are vascular headaches that are associated with REM sleep; the sleeper often wakes up with agonising pain.

Sleep related asthma

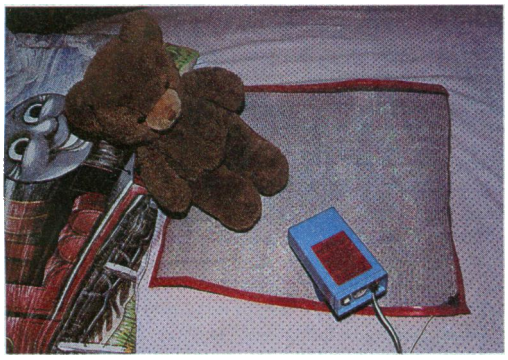
There is a "morning dip" during which attacks of asthma are exacerbated and possibly triggered by REM sleep.

Impaired penile tumescence

Nocturnal erections are a normal component of REM sleep in men. Their occurrence can be used to distinguish organic from psychogenic impotence. In rare cases they become painful and arouse the sleeper.

Other parasomnias

Other parasomnias may occur during any phase of sleep, but particularly stages 1 and 2, and the transitional phases.

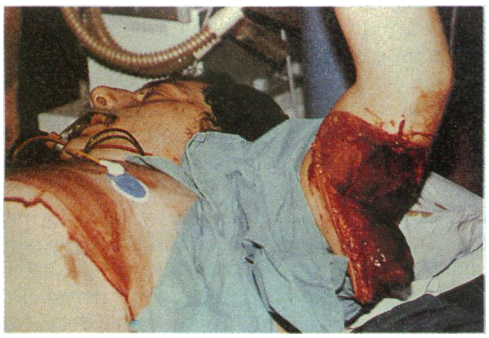


A child's pad and buzzer enuretic alarm. When the pad gets wet the buzzer sounds, waking the child.

Enuresis (bed wetting)

Primary enuresis occurs in children in whom nocturnal toilet training has never been accomplished (between 3 and 6 years). Secondary enuresis occurs in those who have been toilet trained and stopped wetting the bed for at least a few months before starting to wet the bed again. It seems to occur in a random pattern throughout all stages of sleep and is sometimes thought to be related to an immature central nervous system. Sleep related enuresis occurs in about 1-3% of the adult population and in roughly 70% of mentally retarded patients. Genetic factors may be involved, and children with sleep related enuresis seem to have a higher incidence of sleep walking and of night terrors.

Explaining to patients with enuresis that they have different sleep patterns and do not always sense the need to urinate can help to relieve the shame and guilt that they feel. They can be treated with low doses of a tricyclic antidepressant such as imipramine; behavioural techniques such as the use of a pad and buzzer, bladder training, and fluid restriction at night can often eliminate the bed wetting. In difficult cases nocturnal antidiuretic hormone secretion should be measured.



This patient walked through a plate glass door while asleep. His mother and daughter also walk in their sleep.

Bruxism

Bruxism, or grinding the teeth, occurs mainly during sleep stages 1 and 2, and during partial arousals, and usually lasts for about 10 seconds. It comprises the forcible grinding or gnashing of the teeth by rhythmic contraction of the masseter and other muscles during sleep, usually without the patient being aware. The most common symptom is damage to the teeth and, in severe cases, facial pain. Diurnal or daytime bruxism is related to stress and can be treated by biofeedback. Nocturnal bruxism is common (from 5% to 20% of the population) and the aetiology is unknown. The usual "treatment" is a rubber mouthguard which is worn over the teeth at night.

Head banging

This describes the rhythmic rocking movements of the head or body which occur just before sleep or during stages 1 and 2. It is usually limited to childhood but may be seen in adults.

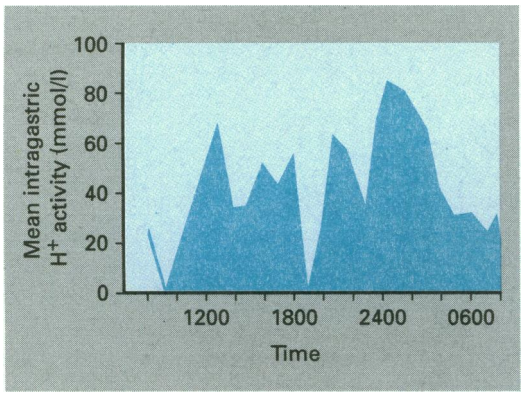


Diagram showing 24 hour gastic acid secretion in a patient with duodenal ulcer. There is a pronounced increase during the night.

Familial sleep paralysis

This is usually a symptom of narcolepsy, although a benign form may occur in isolation.

Cardiovascular symptoms

These may be related more to prolonged recumbence than to sleep. Some may be the result of the low systemic blood pressure during slow wave sleep or to the increased and highly variable heart rate and blood pressure associated with REM sleep.

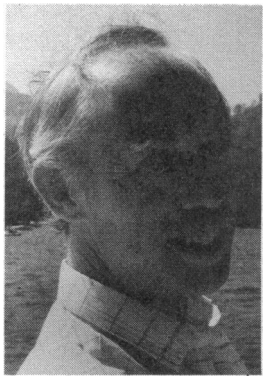
Gastro-oesophageal reflux

This causes patients to wake with heartburn, or a feeling of general pain or tightness in the chest, or a sour taste in the mouth. The cause may be unusually low pressure at the lower oesophageal sphincter. The patient should sleep in a bed that is propped up at the top end, but weight loss and general medical treatment are also required. Reassurance about the distinction between oesophageal reflux and nocturnal angina is important.

Helen S Driver is director of the EDBLO sleep laboratory in the department of physiology, University of the Witwatersrand, Johannesburg, South Africa, and Colin M Shapiro is professor of psychiatry at the University of Toronto, Canada.

The ABC of Sleep Disorders has been edited by Professor Colin M Shapiro.

OBITUARY



R B Trimble

R B TRIMBLE

FRCS, FRCP, FCOPHTH

The ophthalmic literature has seen numerous publications on squints from Liverpool. *The Diagnosis and Management of Ocular Motility Disorders* by Joyce Mein and Roger Trimble, published in 1990, has become one of the standard texts on the subject. The study of eye movement was Roger's main interest, and he inspired several junior doctors to become consultant strabismologists. He was instrumental in setting up the degree course in orthoptics and was the driving force in establishing the university department of orthoptics in Liverpool. He was made honorary lecturer to the department in 1992.

Roger's energy was boundless, both at work and outside it. Skiing was his favourite sport. He was a cheerful man with a wonderful sense of humour. His quiet manner concealed a tenacity of purpose when he believed that the cause was a worthy one. He died of cancer.—DAVID WONG

Roger Blakely Trimble, a consultant ophthalmologist at St Paul's Eye Hospital, Liverpool, since 1976, and director of Liverpool and Chester School of Orthoptics, died 31 December aged 46. Studied medicine at Sheffield University (MB, ChB 1969). Senior registrar in Sheffield and at King's College Hospital and Moorfields Eye Hospital, London.

R LODGE

FRCSED, FRCOG

When I first became a surgeon I had 75 surgical beds and one house surgeon—registrars were unknown at that time. After 11 years as a general surgeon I was persuaded to set up and develop an obstetric and gynaecological specialty in Leicester; my experience in these subjects had been considerable in Edinburgh. An elected member of the Gynaecological Club of Great Britain, I was able to visit the leading clinics in Europe and teaching hospitals in Britain regularly. In addition to my clinical work I undertook many administrative responsibilities. Compulsorily retired at 65, I returned to full duty for two years as a locum and then did virtually unpaid work with patients with cancer for 10 years, pioneering cytology clinics in Leicester.

My outside interests and activities, including holding senior masonic rank, surprised many by their extent, but there always seemed to be time for everything. In addition to playing tennis and golf I was an experienced shot and fisherman, a county bridge player, an avid reader, and a collector of books and I was interested in food and wine and antiques. In 1930 I married Kathleen Lankester, a pathologist; we had a daughter and two sons, one of whom became a doctor. After Kathleen's death in 1968 I enjoyed many years of companionship with Mrs P M Williams.—R LODGE

Ralph Lodge, formerly a consultant obstetrician and gynaecologist at Leicester Royal Infirmary, died 27 November. Born Yorkshire, 29 October 1898; during first world war served in Household Brigade of Artillery in France and Germany. Studied medicine at Edinburgh University (MB, ChB 1924).

W B HEPBURN

MB, BCHIR, DRCOG

Bruce Hepburn was a man of great energy, and in his first few years in practice he wrote six marvellously funny novels under the name of James Balfour, helped build the local church, and edited a local newspaper as well as being almost permanently on call and having three small children.

He was a passionate advocate of the general practitioner as the patient's friend and counsellor and of the importance of continuity of care from one generation to the next. He had no sense of the business side of general practice and never thought to get a contraceptive claim form signed or a private sick note paid for. He was convinced that the debtors' prison was just around the corner and responded by throwing bank statements away unopened. He retired five years ago and thought that he had been fortunate to have had the best years of general practice: before the arrival of the patient as a consumer with a lawyer in his pocket and the doctor as a service provider with a staff of managers.

When I first met him 17 years ago he was living in