

## ***Body 'Jerks' and Restless Limbs during sleep***

1. The majority of abnormal behaviours during sleep are not due to epilepsy.
2. The cause of restless legs and periodic limb movement disorder is not known. They can fluctuate in severity.
3. Sleep walking is very common up to fifteen years of age and usually does not require treatment.
4. In nightmares the person recalls a frightening dream. In night terrors there is no dream recollection.
5. In REM behaviour disorder the person acts out dreams and can injure himself or the bed partner.
6. Nocturnal epilepsy, and in particular frontal lobe epilepsy, can be difficult to recognise.

Regular change of position every twenty to thirty minutes is normal during sleep. Change in position is essential to avoid damage to the skin and muscles. People who are unconscious, drunk or suffering drug overdose and remain in the same position for hours can suffer injury with breakdown of skin and muscle, sometimes causing kidney failure and limb amputation.

However, other abnormal movements or complex behaviour may occur during sleep. They are known under the name of parasomnias.

### **Sleep Starts**

### **Restless leg and periodic limb movement disorder**

### **Sleep talking**

### **Sleep walking**

### **Sleep drunkenness**

### **Nightmare and sleep terrors**

### **REM behaviour disorder**

### **Sleep epilepsy**

### **Bruxism (teeth grinding)**

### **Sleep starts (hypnic jerks)**

These are sudden movements occurring *at sleep onset* and may be associated with feeling of falling, imbalance or floating. Sleep starts are experienced by virtually everyone at some stage. They do not cause any harm and do not require treatment. They seem to be more common after exertion, emotional stress and excess coffee or tea. Attention to these factors will reduce the frequency of sleep starts. If sleep starts are frequent and bothersome mild sedative at bedtime are used on occasion.

### **Restless legs and periodic limb movement disorder**

Restless legs, sometimes called Ekbom syndrome, and periodic limb movement disorder (PLMD) are separate but closely related conditions. They are very common, being reported between 3 and 10 percent of the general population respectively.

Restless legs occur equally in men and women. Typical complaint is of discomfort in the legs, mainly in the calves, sometimes in the thigh. The sensation is described as crawling, or pins and needles or cramping. The feeling is unpleasant although not painful. Restless legs affects both legs, can occur during the day, but is more noticeable around bedtime. The discomfort is relieved by moving the legs or walking. The person often says that they are compelled to move their legs.

The majority of people with restless legs also have periodic limb movement disorder.

This refers to brief jerks of the ankle, knee, hips or arms which occur while the person is asleep and therefore unaware of it. The bed partner however is the one reporting the problem and is complaining of being 'kicked' all night. Periodic limb movement disorder causes lightening up of sleep. The person goes from deep sleep to light sleep each time a jerk occurs. Occasionally they can wake up completely for what appear to be 'no obvious reason'. If the jerks are frequent the person may complain of insomnia, not being able to fall

asleep or remain asleep through the night. He wakes up unrefreshed and he feels tired during the day.

Periodic limb movements are different from sleep starts in the fact that the latter occurs as the person **is falling asleep** and often is aware of it. Periodic limb movement disorder (PLMD) instead occurs **during sleep**.

It is important to stress here the fact that people with PLMD may complain of **insomnia**, difficulty initiating and maintaining sleep, **daytime sleepiness**, **tiredness** and chronic fatigue.

### **Causes and predisposing factors**

It is unclear what causes restless legs and periodic limb movement disorder. It often occurs in families, which suggests a genetic influence. They appear to be more common with increasing age even though often without untoward effects. They occur more commonly in iron deficiency, kidney failure and pregnancy. Certain medications used for depression, tricyclic antidepressants (amitriptyline, doxepin, imipramine) can worsen or trigger periodic limb movements. Withdrawal from benzodiazepines (diazepam, temazepam, oxazepam, nitrazepam) can also make limb movement worse.

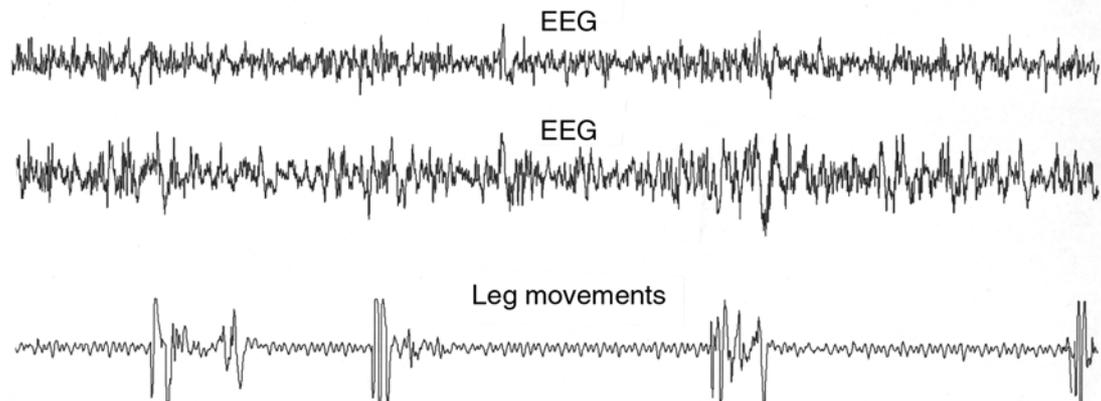
In the condition called fibromyalgia or fibrositis, periodic limb movements are said to be more common. This condition is a variant of chronic fatigue syndrome with frequent muscle and joint aches and unrefreshed sleep.

### **Other reasons for 'aching' and 'jerking' legs**

There are many reasons for leg discomfort, including varicose veins, poor circulation, damage to the nerves (neuropathy), chronic lumbar spine problems and vein clots. People who are on fluid tablets, which often lower the body content of salt, often complain of aching legs.

## How to confirm restless legs and PLMD

The history is usually sufficient provided that the other possibilities mentioned in the previous paragraph are excluded. However if there are any doubts an overnight sleep study will help confirm the diagnosis (figure and video).



## Treatment

The severity of restless legs and PLMD varies from being an occasional nuisance to being a daily debilitating condition.

The first approach is to avoid, if possible, trigger factors. Correction of iron deficiency, avoidance of medications, such as tricyclic antidepressants and avoiding excessive caffeinated beverages. When needed two groups of medications are useful in these conditions, opioid (morphine, codeine) and benzodiazepines. Morphine is probably the most effective but like codeine it can cause constipation, problems with voiding, nausea and they are seen by people with concern because of the risk of 'addiction'. The concern of addiction, which also involves benzodiazepines, is overstated particularly considering that this medication are taken for a specific medical condition and under medical supervision. Our practice is to start the person with short acting benzodiazepines such as temazepam 10-20 mg (one or two tablets at bedtime). A similar medication that people may have been started on in the past, called Rivotril™, is not available at present because of Medicare restriction.

Codeine, 30-60 mg at bed time or morphine up to 40-50 mg are effective in suppressing the symptoms.

We usually recommend that the medication is used daily for two or three weeks and after that can be reduced to every second day or simply 'when needed'. In severe conditions the medication has to be taken daily for a long time.

Although treatment is usually given at night, some people with restless legs may need to take a dose in the morning as well.

It should be stressed that the symptoms can fluctuate spontaneously over time. This is to say that the person can improve with no treatment.

Quinate tablets are frequently used by people with symptoms of cramps in the calves with some documented effect.

Natural products such as ginseng and ginko-bilba are often used but are not useful in our experience.

The use of anti-Parkinson medications such as Sinemet™ or Madopar™ are commonly advocated. We have not found these medications consistently useful and are difficult to manage.

### **Sleep talking**

Sleep talking is a common event during sleep. It can occur both during REM and non-REM sleep. It is often associated with other activities such sleep walking. The person has no recollection of the words, which at times are incomprehensible.

Like for sleep walking there is often a family history of it. Contrary to common belief there is no relation with anxiety or depression. No treatment is necessary.

## **Sleep walking**

Sleep walking refers to both simple and complex behaviour during sleep. The sleep walker can simply sit up in bed, move their arm and head around, either with their eyes open or closed or they can get out of bed and perform complex and prolonged tasks. They are difficult to arouse and when they awake they can be disoriented for a minute or two. The person has no recollection of the events. Sleep talking is often present as well.

Sleep walking has attracted vast interest spanning from literature, folklore and the legal system. The belief that sleep walkers can perform at risk tasks safely such as walking on a balcony or tight rope is simply not true. Severe injuries do occur, with people going through glass doors, falling out of windows, leaving gas outlet opened.

Of media interest are situations where a crime is committed in alleged sleep walking state. Although open to debate, it is recognised that complex behaviour can occur during sleep walking including criminal action. The legal implications are important because in this circumstance the offender may be considered not responsible because of lack of consciousness.

Sleep walking is mostly a condition of childhood with onset between 4 and 6 years of age and remission by teenage years. It may persist in adulthood. However, when sleep walking starts in adulthood without having been present as a child, other possibilities need to be considered. Specifically a form of epilepsy called complex partial seizures need to be excluded. In this group of people psychological disturbance such as anxiety, depression, manic personality are said to be common but evidence for these claims are only anecdotal..

Sleep walking occurs during a part of sleep called slow wave sleep (non-rem sleep) and more common in the first part of the night. The cause of sleep walking is not known. It can run in families with increased risk if both

parents have suffered from it. Physical tiredness and sleep deprivation can be triggers of sleep walking.

### **Conditions similar to sleep walking**

Complex activities during sleep may be due to other sleep disorders such as epilepsy, REM behaviour disorder, night terrors and sleep drunkenness as described below.

Treatment is rarely needed except when people put themselves or others at risk. Reassurance and avoiding injury is often all that is needed. However, if the behaviour continues and is dangerous short acting benzodiazepines such as temazepam and tricyclic anti-depressants such as imipramine can be used on a "when needed basis".

### **Sleep drunkenness**

Sleep drunkenness is common in children and can occur in adults. It is a state of partial wakefulness where the person is 'half asleep and half awake'. When brain activity is monitored it shows recurrent micro sleep (a repetition of brief period of wakefulness followed by brief periods of sleep). They appear confused and disoriented. They may be able to respond to questions and commands. There is no recollection of the events when the person wakes up in the morning. In children sleep drunkenness is common if the child is woken up forcefully from deep sleep in the middle of the night. In adults it is seen in patients with sleep apnoea and in states of increased sleepiness, such as chronic sleep deprivation and narcolepsy. Reassurance that the condition is benign is usually sufficient.

### **Sleep terrors**

Sleep terrors also occur during the period of slow wave sleep and often co-exist with sleep walking. It is more common in toddlers and young children and tends to resolve spontaneously. Sleep terrors are of sudden onset. The child sits up in bed often with screaming and vocalisations, which are usually

not comprehensible. He may leave the bed or fight if someone tries to console or restrain him. The episode settles spontaneously and the person goes back to sleep.

If the child is awakened he may be disoriented and have no recollection of the event or of any dreaming. Bed wetting can occur during these episodes. Like in sleep walking there may be a family history of it. Tiredness, fever and prior sleep deprivation can be a trigger of it.

In childhood sleep terrors are not suggestive of psychopathology but onset in adolescence and adulthood may be associated with psychiatric illnesses.

Apart from reassurance and avoidance of injury, which may occur if the child runs out of bed, no other treatment is needed except in exceptional circumstances where the use of benzodiazepine or imipramine can be considered.

### **Nightmares**

Nightmares are described here because they are often confused with night terrors and REM behaviour disorder. Nightmares are different from sleep terrors because they usually occur during rapid eye movement (REM) sleep and are frightening dreams, which cause anxiety. The person has recollection of dreams contrary to sleep terrors. They can start at any age.

Prolonged stressful situations can result in increased frequency of nightmares. Over 50 percent of patients with post traumatic stress disorder (PTSD) report nightmares once a month, compared to 24 percent of young students who report them once a year. Medications for high blood pressure and Parkinson's disease such as beta-blockers and L-dopa can increase the risk of nightmares. They occur in a majority of people at some stage in life.

Treatment may be needed if they are frequent. Simple reassurance can be sufficient. Counselling regarding ongoing stress or specific psychiatric

treatment may be needed. Medications, which suppress REM stage, are useful and this included benzodiazepine and tricyclic antidepressants. Treatment will be continued for a few weeks and then tapered off slowly.

### **REM sleep behaviour disorder**

This is a condition usually seen in middle aged and elderly men and rarely in young people. It results from 'acting out of dreams'.

In REM sleep behaviour disorder patients can have violent movements during sleep which can lead to injury to themselves or their bed partner. The patient can punch, kick, leap out of bed, even run from the bed in an attempted enactment of dreams. This behaviour during sleep can occur occasionally or up to three or four times per night on consecutive nights. It is more common in males than females.

In the majority of cases there is no obvious reason for it. Occasionally it can occur following withdrawal from alcohol and sedatives as well as antidepressant medication. There is an association between REM behaviour disorders and neurological abnormalities such as Parkinson disease, dementia and previous stroke.

Treatment when needed involves the use of medication, which suppresses rapid eye movement. A medication called clonazepam (Rivotril™), has been used in the past and is usually effective. Other benzodiazepines can also be used.

REM behaviour disorder can be confused with nocturnal epilepsy and in particular with frontal lobe epilepsy (see below).

### **Sleep epilepsy**

Some forms of epilepsy only occurs during sleep. The typical form of epilepsy where the person initially becomes rigid and stiff with grunting noises followed by jerky movements it is easily recognisable as epilepsy if witnessed. The

person can wet himself, bite his tongue or lips with a prolonged period of drowsiness after the seizure is finished. In a form of epilepsy called temporal lobe epilepsy or psychomotor epilepsy the persons behaviour can be difficult to distinguish from sleep walking. In epilepsy however, movements are often repetitive. The person is less likely to go back to bed and resume sleep like it happens in sleep walking.

The use of special tests such as EEG and a sleep study with video taping can help distinguish between the forms of abnormal behaviour during sleep.

One particular form of epilepsy called **frontal lobe epilepsy** is worth mentioning. It occurs during sleep, it is often not recognised or mistaken for other movement disorders. Frontal lobe epilepsy is genetic and there may be a family history of it, unless it has not been recognised before. It starts in childhood or adolescence. It varies in severity from simple repeating stroking of the nose, waving of the arms to strong rhythmic jerks that can shake the bed. The activity can last three to four seconds to more than a minute. Epileptic activity in the brain is only recorded during the attack, but not in between. Therefore the EEG (electroencephalogram) recorded during the day is normal. This makes the diagnosis difficult.

The characteristic of frontal lobe epilepsy is that the motor activity (stroking of the nose or of the ear, jerky movements) is always the same night by night. The observation by the bed partner or the parents of the repetitive nature of the movement should raise suspicion. Frontal lobe epilepsy tends to occur any time during the night, while sleep walking is more common in the first part of the night. Also the abnormal behaviour due to frontal lobe epilepsy is frequent occurring many nights each week, contrary to the other parasomnias which are less frequent.

Treatment is with a medication called carbamazepine (Tegretol™) or clonazepam (Rivotril™) taken at night.

### **Teeth grinding (bruxism)**

Teeth grinding is common both in men and women. It may be an occasional complaint occurring only during period of stress, or a regular event. It often starts in childhood and may be diagnosed by the dentist who notices damage to the teeth due to mechanical attrition. The noise produced by teeth grinding can be loud and unpleasant. The person himself may not be aware, or may complain sore jaw in the morning. Bruxism is more common in certain family. An important and remediable cause of teeth grinding is poor dental occlusion. If dental contacts and alignment are abnormal it can trigger spasm in the jaw muscles and result in bruxism. In this cases dental treatment, including orthodontic, is needed.

It is well documented that high level of stress predisposes to teeth grinding and that it is more common in anxious people. High alcohol intake (four or more standard drinks) is said to increase bruxism.

Treatment is not needed if the condition is rare. Proper dental care with optimisation of occlusion, and sometime a mouthguard are usually effective. If this treatment fails or is not possible, benzodiazepine are useful in particular in anxious people and when stress is present.

### **Head-banging**

Headbanging is common in toddler and consists of rhythmic movements of the head against the pillow or the side of the crib. It is considered a benign form of self-soothing to sleep. Usually no intervention is needed.

Further reading.

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