

Periodic or Rhythmic Movements During Sleep



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KEYWORDS

- Sleep-related movement disorders • Periodic limb movement • Rhythmic movement disorder
- Sleep bruxism • Hypnagogic foot tremor • Alternating leg muscle activation
- Propriospinal myoclonus

KEY POINTS

- Rhythmic movements of sleep are repetitive, stereotyped movements occurring mostly in children and usually represent a benign condition. However, other sleep-related disorders and psychiatric conditions can sometimes coexist and thus must be sought.
- Periodic limb movements of sleep increase with age and are often associated with restless legs syndrome and other sleep-related or medical disorders. Their significance is debated, but they have been associated with sleep disturbance.
- Diagnosis of sleep bruxism requires identification of tooth-grinding sounds during sleep with orofacial signs or symptoms. Treatment options include occlusal splints and pharmacologic or non-pharmacologic methods.
- Hypnagogic foot tremor, alternating leg muscle activation, and propriospinal myoclonus are other rare sleep-related movement disorders.

CLINICAL CASE

John and Jane Doe, parents of John Jr, are concerned because their 2-year-old boy is having strange spells: he goes on all fours and rocks his body to and fro for about 1 minute and then falls asleep. He sometimes wakes up and then does it again and falls back asleep. He has no clear knowledge of his nighttime antics. The parents were not overly concerned until John Jr fell out of bed and banged his head during one episode. Jane has read about epilepsy and wonders whether there is a more ominous problem lurking around the corner. Otherwise, John Jr is in good health, and was born at term without any particular

problem. He is doing fine in daycare and achieved all his milestones at the proper time. The parents want to be reassured and wonder whether further investigation is required.

SLEEP-RELATED RHYTHMIC MOVEMENT DISORDER

Rhythmic movement disorder (RMD) is described by the International Classification of Sleep Medicine (ICDS-3) as repetitive, stereotyped, and rhythmic movements (RMs) involving large muscle groups occurring in association with sleep.¹ The movements can encompass the head, neck, trunk, limbs, or a combination of body parts, jerking at a

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frequency of 0.5 to 2 per second. One episode can last a few seconds to several minutes, but usually less than 15 minutes. Single or multiple episodes of the same or different movements can take place during the same night.²⁻⁵ To be considered a disorder, an RM has to have a biological consequence, such as impairment in sleep or daytime functioning, or a physical injury. The diagnostic criteria of RMD are displayed in **Box 1**.

Epidemiology

RMs are most frequently seen in infancy and childhood, their appearance shadowing the milestones of psychomotor development (**Box 2**).⁵⁻⁷ Some clinicians have even hypothesized that they are implicated in motor development via vestibular stimulation.⁸

Persistence of RMs into adolescence and adulthood is increasingly recognized. One study found a persistence rate of 3% of body rocking in children at 13 years of age, but other reports suggest higher rates for RMs in adult patients.^{4,5} Onset in adulthood is rare, but has been reported following head trauma and herpes encephalitis.⁹ However, recurrence of a previous RMD is possible in young adults.⁸

Clinical Evaluation

Most patients encountered in clinics who are diagnosed with RMD are referred either because of

Box 1

RMD diagnostic criteria

1. The patient shows repetitive, stereotyped, and rhythmic motor behaviors involving large muscle groups.
2. The movements are predominantly sleep related, occurring near nap or bedtime, or when the individual appears drowsy or asleep.
3. The behavior results in a significant complaint as manifest by at least 1 of the following:
 - Interference with normal sleep
 - Significant impairment in daytime function
 - Self-inflicted bodily injury or likelihood of injury if preventive measures are not used
4. The RMs are not better explained by another movement disorder or epilepsy.

From American Academy of Sleep Medicine. International classification of sleep disorders. In: Sateia M, editor. Diagnostic and coding manual. 3rd edition. Darien (IL): American Academy of Sleep Medicine; 2014; with permission.

Box 2

Clinical features of RMD

- Usually starts before 18 months: prevalence 66% at 9 months, declining thereafter to 6% at 5 years⁷
- Most common⁶
 - Body rocking (19.1%)
 - Head rolling (6.3%)
 - Head banging (5.1%)
- Less common⁶
 - Body rolling
 - Leg banging
 - Leg rolling

concerns or complaints from their parents or bed partners or for evaluation of other sleep problems. Patients are typically amnesic of the events. Moreover, RM during sleep is sometimes viewed as a physiologic phenomenon.⁸ This hypothesis is based on RMs often being self-limited and happening in normal children. In general, the disorder is mild with few episodes arising occasionally during sleep. Nevertheless, severe cases with clusters of episodes on successive nights exist. Rare complications such as carotid artery dissection, cataracts, retinal detachment, head injury, and skin and soft tissue lesions have been reported, especially with head banging.^{9,10} Poor sleep quality and daytime complaints, including sleepiness, tiredness, poor concentration, and morning headache are also associated with RMD.^{4,11} Some of those symptoms might also be linked to psychiatric disorders. Besides psychiatric comorbidities, sleep-related disorders should also be explored when evaluating a patient with suspected RMD (**Box 3**).^{2-5,12,13}

Diagnosis

Polysomnography (PSG) can support the diagnosis of RMD. It is helpful when the diagnosis is ambiguous or based solely on clinical grounds. In addition, PSG is useful to exclude conditions that may mimic RMD. Adding a video recording can assist in improving diagnostic accuracy. If seizures are suspected, a full electroencephalography (EEG) examination can be added.

A RM episode is recognized as a transient increase in muscle tone on electromyogram (EMG) leads and as movement artifacts on the electrooculogram and EEG. The guidelines for scoring RMD in PSG are listed in **Box 4**.¹⁴

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