

Periodic Limb Movement Disorder

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Periodic Limb Movement Disorder (PLMD) is a disorder where your legs twitch periodically every 20 – 90 seconds during certain periods of your sleep. Often when the legs twitch it wakes the brain up for a few seconds. You are usually unaware of these arousals. However, if the arousals are frequent enough, they can significantly reduce the quality of sleep resulting in daytime fatigue and sleepiness.

Most people are not aware that they are twitching in their sleep. The arousals that may follow a twitch are also usually too short to remember. Your bed partner may be aware of you twitching or kicking in your sleep. If the leg twitches are big enough you may kick something and wake yourself up. Some people with significant PLMD may notice that their bed is quite messed up in the morning from all the movement during the night. Severe cases may wear holes in their bed sheets. You may be aware of waking up more frequently during the night and not know why.

There are often underlying triggers for PLMD. Back pain, sciatica, arthritis pain, and peripheral neuropathy can trigger or aggravate PLMD. The analogy is like the fly on the horse's flank causing the tail to swish or the muscle to quiver. There is a nervous system reflex that tries to shake the fly off. In humans the reflex is triggered by discomfort.

About 80% of people with *Restless Legs Syndrome* (RLS) may have PLMD. However, most people who have PLMD do not have RLS. RLS and PLMD are often confused with each other. RLS happens to you when you are awake, and you certainly are aware of it because it makes it hard to fall asleep. PLMD happens to you when you are asleep, and you are usually unaware of it.

Other factors that can trigger or aggravate PLMD include low iron levels, liver or kidney failure, caffeine, some over-the-counter sleep aids, antidepressants, and antipsychotic medications. All these factors aggravate RLS as well. It is not uncommon to see patients with an underlying sleep disorder and fatigue misdiagnosed as depression and made worse by antidepressant medication.

Diagnosis

Because PLMD occurs when you sleep, you have to have a high index of suspicion to diagnose it. Diagnosis requires a [Nocturnal Polysomnogram](#) to objectively evaluate your sleep.

Many people will twitch as they fall asleep but not necessarily during their sleep. These are called *Myoclonic Jerks* or *Hypnic Jerks*. Hypnic jerks may make it harder to fall asleep but do not cause significant sleep disturbance once you are in sustained sleep. Some people will have semi-purposeful movements in their sleep related to dream content. These movements are usually irregular and short lived whereas PLMD movements are repetitive and stereotypical (the same movement repeatedly every 20 – 90 seconds) and can occur for large portions of the night.

It is difficult and somewhat arbitrary to determine the severity of PLMD. The severity is based on the number of Periodic Limb Movements (PLM's) per hour and the number of PLM's that cause arousals (PLM arousals) per hour on the Nocturnal Polysomnogram. Generally, the most clinically significant index is the number of PLM arousals per hour. However, it should be noted that if you took a sleeping pill on the night of the polysomnogram then the number of arousals may be underestimated due to the sedating effect of the sleeping pill. In our lab we score 15 or less PLM arousals per hour in the normal range, 15 – 25 is mild, 25 – 50 is moderate and above 50 per hour is considered severe PLMD.

However, the PLMD arousal index does not correlate well with how tired or sleepy it makes you feel. In general, most patients I treat do not notice much benefit unless the severity is greater than 40 or 50 PLM arousals per hour. Severe PLMD is common in the elderly and I often do not notice much benefit in treating this group unless I cannot find any other cause of their fatigue or sleepiness.

Because PLMD has a variable affect on sleep quality, unless it is quite severe, I will usually treat the other sleep disorders first to see what benefit they notice. I do not use medication to treat PLMD just because it is there on the polysomnogram. I only treat if the patient is tired or sleepy AND if the treatment causes a noticeable improvement in their daytime fatigue or sleepiness.

Management

If a trigger or aggravating factor can be identified and removed, that would be the ideal form of treatment. If serum ferritin (a blood test that measures iron stores in the body) is less than 50 micrograms/litre, then increasing your iron intake through diet or supplements may be helpful.

If you are taking antidepressants or major tranquilizers to help insomnia, then your insomnia diagnosis and management needs to be re-evaluated. If you are taking these medications for depression it is possible that your depression is aggravated or caused by your underlying sleep disorder. Once you treat your sleep disorder your need for antidepressant medication may reduce and the dosage can be lowered.

The most effective group of medications to treat PLMD is anti-Parkinson medications such as Levodopa/carbidopa (Sinemet) and Pramipexole (Mirapex).

Sinemet 100/25 CR is taken an hour before bedtime to give it a chance to start working before sleep onset. Because you do not know your legs are twitching in your sleep, the only way you really know if the medication is helping is if you start to feel more rested the next day. Thus, if you are not having any side effects, you should keep increasing by one pill per week all the way up to 4 per night to see if you notice an improvement in your sleep quality or energy levels the next day. If you do, then you can reduce the medication to the minimum dosage that seems to work the best for you. If you do not notice any benefit even on 4 pills per night, then it is probably not going to help, and you should wean off and stop the medication over the next week.

The most common side effect of anti-Parkinson medications is nausea. This affects about 20% of people taking this medication. The nausea is usually mild because the dosage is low (compared to when using it in Parkinson's disease) and will often resolve spontaneously after about a week. If it is more than mild, then the medication may need to be stopped. This medication can lower blood pressure a little. It can also unmask hallucinations in people already predisposed to schizophrenia. It can very occasionally cause insomnia.

Another anti-Parkinson option is Pramipexole (Mirapex) 0.125 mg. Again, it is taken an hour before bedtime and increased by one pill per week up to 4 pills per night to determine if there is a noticeable benefit. The side effects are similar to Sinemet. Another rare side effect is "sleep attacks". Normally we are improving sleepiness in our patients so this quite rare.

Benzodiazepines are also effective. They do not stop the twitching like anti-Parkinson medication. Benzodiazepines work by reducing the arousals caused by the twitching. Usually Clonazepam in 0.5 to 2 mg is used although other benzodiazepines are effective too. The main issue with benzodiazepines is that tolerance may occur more quickly.

In people with pain as a major contributing factor to their PLMD, anticonvulsant medications such as Gabapentin (Neurontin) or Pregabalin (Lyrica) can be helpful to reduce both the pain and PLMD at night. Gabapentin 300 - 1200 mg or Pregabalin 75 - 150 mg should be taken at least an hour before bedtime. The most common side effect is sedation the next day.