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Acting Out Your Dreams May Be Dangerous And Could Be an Early Sign of a Neurological Disorder

It is 4:30 AM and you are sound asleep. Suddenly your significant other screams and starts punching and kicking you. You struggle to protect yourself and don't understand what is happening. Your partner is very confused and extremely upset that they may have hurt you. This frightening scenario is estimated to occur in approximately 1% of the population, so this type of event happens in millions of households every night.

Sleep is an important biological process that preserves both mental and physical health. Sleep is typically characterized by two main types of architecture: 1) rapid eye movement (REM) sleep and 2) non-REM sleep. As suggested by the name, REM sleep is an interesting physiological state associated with random movements of the eyes and an associated lack of muscle activity. Dreams during REM sleep are typically quite vivid. However, the muscles throughout the body are turned off (i.e., the body is paralyzed) during REM sleep to prevent us from acting out of our dreams.

In contrast, non-REM sleep is defined as 3 stages of progressively deeper sleep beginning with stage N1 at the onset of sleep, usually described as a "light sleep" that lasts only a few minutes where an individual can be easily awakened. The 2nd stage of sleep, N2, is noted by deeper breathing, less physical movement, and sleep spindles recorded on electroencephalogram (EEG). The 3rd stage of sleep, N3, is the deepest stage of sleep and is when physical restoration of the body occurs and when slow waves are noted on EEG. If awoken from stage N3 sleep, individuals are typically very groggy and confused.

A person falling asleep descends and ascends through the full range of non-REM sleep stages N1, N2, N3, N2, and N1 before achieving the first REM sleep cycle of the night. This cycle, which lasts 90 minutes, is typically repeated 3-4 times each night with more REM sleep occurring later in the night, and more N3 sleep occurring earlier in the night.

REM sleep behavior disorder (also known as RBD) is a disorder characterized by the sudden onset of physical and/or vocal activity during REM sleep. Because of the increase in REM sleep activity later in the evening, RBD is typically seen late at night or early in the morning. RBD is typically noted by significant others who are shocked out of sleep because their bed partner is screaming, attacking them, or both.

Although RBD may be caused by a number of different underlying conditions, the vast majority of cases are due to the insidious onset of a neurodegenerative disease, such as Parkinson's disease, which together with multiple system atrophy, dementia with Lewy bodies, and pure autonomic failure make up a family of diseases called synucleinopathies. Research has shown that over 12 years, ~75% of individuals with RBD will develop clinical symptoms associated with one of the four synucleinopathies. As a consequence of this high conversion rate, RBD is now considered a prodromal synucleinopathy.

Patients with RBD are a danger to themselves and to others because of the violent nature of their dream enactment. Typical safeguards for patients and significant others include removal of any dangerous items from the bedroom, especially firearms. However, other small items that could be picked up and thrown should be removed as well. Beds should be close to the ground in case of a fall, and bed partners may need to consider moving to a separate room for safety.

Several medical treatment options exist for patients in whom conservative treatment is unsuccessful. Clonazepam and melatonin are both considered effective therapies for RBD and can diminish the movements associated with RBD.

The diagnosis of RBD typically occurs through a sleep study were detection of dream enactment during the REM stage of sleep is observed. However, several questionnaires successfully identify RBD with reasonable sensitivity and specificity and may be sufficient for diagnosis in some cases. Recently, the use of skin biopsy to detect the presence of the abnormal synuclein protein has been shown in research studies to be both sensitive and highly specific for detecting the pathologic protein in patients with RBD.

At present there are no treatments available for the underlying problem that causes RBD (the pathologic accumulation of phosphorylated alpha-synuclein in the brain). However, the opportunities for early diagnosis of RBD prior to the development of one of the synucleinopathies has created a window of opportunity for novel treatments to prevent the development of a neurodegenerative disease. A number of treatments are in the early to middle stages of development, and we may see a significant change in the treatment of neurodegenerative disease over the next few years.