Sleep and seizures – the facts

• Sleep deprivation is one of the most commonly reported seizure triggers by people with epilepsy
• Nocturnal seizures, even if only brief can disrupt sleep and increase daytime drowsiness
• Drowsiness can increase the risk of daytime seizures for people who would normally only have seizures during sleep
• Nocturnal seizures may be misdiagnosed as a sleep disorder and vice versa
• Some antiepileptic medications (AEDs) can contribute to sleeping difficulties or daytime drowsiness
• People with epilepsy who have sleep disturbances have a poorer quality of life, compared to those without sleep disturbances.
• Sleep apnoea is about twice as common in people with poorly controlled epilepsy than in the general population
• Treatment of a sleep disorder generally improves seizure control and quality of life
• Lastly, sleep disorders can exacerbate epilepsy and epilepsy can exacerbate certain sleep disorders

Nocturnal Seizures: Why do so many seizures happen during sleep?

Seizures during sleep can occur with any type of epilepsy. Some people have seizures occurring exclusively during sleep whilst others have both daytime and nocturnal seizures. People who have only nocturnal seizures are the ones defined as having pure nocturnal epilepsy.

Nocturnal seizures are defined as ‘seizures occurring exclusively or predominantly (more than 90%) from sleep.’ (The International League Against Epilepsy (ILAE)).

Why do nocturnal seizures occur?

Epileptic seizures are often strongly influenced by the sleep-wake cycle. It is thought the change of state during sleep impacts the ‘epileptic activity’ in the brain of people with epilepsy because some seizures occur predominantly certain stages of sleep or upon arousal.

It’s believed that nocturnal seizures are triggered by changes in the brains electrical activity during the transition between different stages of sleep and between sleep and awakening. As an example, in wakefulness, our brain waves remain fairly constant, but during sleep there are many changes. We go to bed and transition from wakefulness to drowsiness to light sleep, to deep sleep through to Rapid Eye Movement (REM) sleep - and this cycle occurs 3-4 times per night. There are dramatic changes on EEG during these sleep changes.

Sleep is either REM (Rapid Eye Movement) or non-REM, and further divided into stages. Non-REM Stages 1, 2, 3, and 4 and REM sleep. Seizures don’t seem to happen during REM sleep but may occur at other times during the sleep cycle, mostly in light sleep – that is, stages 1 and 2 of sleep. Nocturnal seizures can also occur upon waking or arousal during the night.
Why do nocturnal seizures occur? continued...

This generally means there are more common times at which nocturnal seizures happen:

- Within the first or second hour after going off to sleep (early nocturnal seizures)
- One to two hours before the usual time of wakening (early morning seizures)
- Within the first hour or so after wakening (early morning seizures).

Seizures that occur during sleep may also happen during an afternoon nap – they are not limited to night-time.

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
<th>Stage 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep onset, non-REM sleep</td>
<td>Non-REM sleep</td>
<td>Non-REM sleep</td>
<td>Non-REM sleep</td>
<td>REM sleep</td>
</tr>
<tr>
<td>Drowsiness/ light sleep, easily awoken</td>
<td>Light sleep</td>
<td>Deep sleep begins</td>
<td>Deep sleep</td>
<td>“Active” sleep, when you dream</td>
</tr>
<tr>
<td>This is when you start falling asleep and is usually brief.</td>
<td>Your brain activity heart rate &amp; breathing start to slow down. You begin to reach a state of total relaxation in preparation for the deeper sleep to come.</td>
<td>This is also known as slow wave sleep. Your brain waves further slow but there may still be short bursts of faster brain activity. If you were awoken during this stage, you would be groggy &amp; confused, &amp; find it difficult to focus at first.</td>
<td>This is where you experience your deepest sleep of the night. Your brain is mostly slow wave activity, &amp; it’s difficult to wake someone up when they are in this stage.</td>
<td>Your blood flow, breathing, &amp; brain activity increases, but your muscles go into a paralysis-like state. The brain activity looks similar to when you are awake.</td>
</tr>
</tbody>
</table>

Diagnosing nocturnal seizures

It can be difficult to diagnose nocturnal seizures because they happen during sleep and the person may not be aware of them. Nocturnal seizures can be any type of seizure and sometimes are too subtle to detect. Also, focal seizures can sometimes be confused with some sleep disorders.

As with most other forms of epilepsy, a good history of the seizures, or an eyewitness account is very important for diagnosis. The doctor may also suggest a video sleep EEG.

If left undiagnosed, the person may suffer from excessive daytime sleepiness on a regular basis. This can impact concentration, attention and learning as well as behaviour and emotions leading to in reduced quality of life.

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1300 37 45 37

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Fact Sheet: Nocturnal Seizures

Are there specific types of epilepsy where people have nocturnal seizures?

Nocturnal seizures can happen to anyone with epilepsy, but they are also associated with some types of epilepsy syndromes.

Can they change to daytime seizures?

If a person maintains a pattern of only having seizures during sleep for several years, the probability of the seizures happening during wakefulness is small. However, this does not mean daytime seizures won’t occur. There may be situations where someone with nocturnal epilepsy is put under duress, such as extreme stress or sleep deprivation and medication changes or withdrawal, all which lower their seizure threshold and increase the risk of a seizure, day or night.

Daytime seizures may also occur if someone with nocturnal epilepsy decides to take a daytime nap or becomes very drowsy during the day. With good seizure and lifestyle management however, the risks of a daytime seizure can be greatly reduced.

How are they managed?

It is important to aim for the best seizure control possible because nocturnal seizures can interrupt sleep, sometimes quite a lot. This can then become a cycle of sleep deprivation, which is also a common trigger for seizures, and consequently more seizures will occur.

Medical treatment of nocturnal seizures is similar to treating daytime seizures, although sometimes the specialist may prescribe a higher evening dose of antiepileptic medication.

Medical management of seizures is generally based on the type of seizures rather than on the time of occurrence.

SUDEP

Sudden Unexpected Death in Epilepsy (SUDEP) is when a person with epilepsy dies suddenly and prematurely and no reason for death is found. SUDEP deaths are often un witnessed with many of the deaths occurring overnight during sleep. There may be obvious signs a seizure has happened, though this isn’t always the case.

Although the risk of SUDEP is very low, the risk increases for people with tonic-clonic seizures, especially if they happen at night or when asleep. Click here to take action against this risk.

We also have a SUDEP and Safety Checklist which your GP or Epilepsy Nurse can discuss with you.

Practice good sleep habits

Try some of these ideas:

• Keep the same bedtime and rising times as much as possible
• Work with your internal body clock, so don’t ignore tiredness, go to bed when your body tells you to
• Make sure your bedroom is a restful and calm place to be. Keep it dark at night and open the blinds when you wake
• Avoid shift work if you can, as it affects sleep times and quality of sleep.

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Practice good sleep habits continued.....

• Avoid any caffeinated products or stimulating substances after lunch as this can also affect sleep quality, and can also affect seizures in some people
• Regular exercise can improve a restful sleep. Don’t exercise within four hours of bedtime though
• Keep evening activities calm or use relaxation or breathing techniques to establish a more efficient sleep pattern
• Read (for enjoyment) before going to sleep if that relaxes you
• If you are worried about something try not to think about it just before bedtime, but rather write a list to help put those problems aside and deal with them in the morning.
• If you like to have an alarm clock in the bedroom, don’t have it where you can see the time. If you wake up in the night, it is best not to keep looking at the clock
• If you have tried and failed to improve your sleep, there are sleep specialists who can help

The effect of antiepileptic medications on sleep varies from person to person. If you start or change medication and find this has a negative impact on your sleep patterns, or you are excessively tired this could be due to this change and is something worth discussing with your neurologist or GP.

Safety

Having a seizure in bed, particularly if you live or sleep alone, poses a number of safety risks.

For a person with nocturnal seizures, it may be wise to:

• Choose a low bed and avoid sleeping in a top bunk
• Keep heavy or sharp cornered furniture away from the bedside to prevent injury
• Consider using a safety mat on the floor next to the bed if the person tends to fall out of bed during seizures. Like those used in gyms. These can be bought at a department, hardware or rubber store
• Wall mounted lamps pose less safety risks than ordinary table lamps or study lamps, which can be easily knocked over. If you wish to learn more about safety, please look at our factsheets available online.
• There are many devices for night-time seizure monitoring available for use in the home. They are designed to recognise that a seizure has occurred or that breathing has been disrupted and trigger an alarm so assistance can be provided. Although many people find these monitors helpful, these devices cannot guarantee the safety of a person experiencing nocturnal seizures. Please see our safety devices list here. However, some families have used monitors as a part of a risk reduction plan. Speak to your doctor about whether a device is something that you might choose to use. You may also seek out the advice and personal experience of others in an online community.
• There are also special pillows available called an ‘anti-suffocation’ pillow, which allows more airflow.
• If there is someone available to help you if you have a seizure, make sure they know how to put you into the recovery position (onto your side) and that they know what to do in an emergency. Download a free seizure first aid poster here
Summary

There is an inherent relationship between sleep and epilepsy where brain wave changes seen in sleep, can sometimes activate seizures. Epilepsy can cause sleep deprivation which is a commonly reported seizure trigger and aggravates epilepsy. People with epilepsy also have a higher rate of sleep disorders, especially sleep apnoea. Plus, some medications used to treat epilepsy may also impact sleep. If nocturnal seizures aren’t detected or diagnosed, this can result in years of daytime fatigue, memory and concentration problems.

Good sleep patterns are essential for people with epilepsy. For someone with nocturnal seizures, this also means good seizure management.

Further information

Epilepsy and Sleep: Neurologist Dr Dan McLaughlin talks about epilepsy and sleep
Epilepsy and sleep apnoea
Sleep Factsheet
Sleep Health Foundation Australia
SUDEP and Seizure Safety Checklist

References:


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This information is given to provide accurate, general information about epilepsy. Medical information and knowledge changes rapidly and you should consult your doctor for more detailed information. This is not medical advice and you should not make any medication or treatment changes without consulting your doctor.