Insomnia and Its Treatment 2.0 CE Hours

Quiz Button

Course Objectives:

1. Define insomnia
2. Describe the classes of medications for insomnia
3. Name the medications that benzodiazepines interact with
4. Describe cognitive impairment that occurs when benzodiazepines are combined with certain medications
5. Describe the side effects of benzodiazepines including its two main drawbacks
6. Describe how prescription medications work in regards to GABA receptors
7. Describe the safety profile of the current prescription medications
8. Describe counseling points and limitations
9. Know limitations on using sleep medications in elderly people

Insomnia and its Treatment

Occasionally insomnia, difficulty falling asleep, happens to most people at one time or another. Usually, sleep disorders are divided into those that cause daytime sleepiness and those that cause sleep disruption. This may be due to many reasons such as depression, jet lag, medications or may be secondary to a disease. Therefore, it is of utmost importance that the doctor takes a thorough medication history before prescribing any medication. Transient insomnia affects 80% of the people while 15 % suffer chronic insomnia. One particularly important factor to consider is the patient’s substance abuse history as many sleep medications are controlled substances with chance

for abuse.

More than a third of our lives are spent asleep. Sleep deprivation affects everything from mood to concentration. In fact, there are more than 90 sleep disorders and the pervasiveness of sleep disorders is evident from the number of sleep studies that are conducted across the US. It is known that chronic insomnia is common, but the studies of its prevalence have inconclusive evidence. Some studies have indicated that about 30% of the population has sleep disruption, and 10% have symptoms associated with daytime impairment that is consistent with insomnia. However, it is unclear whether that 10% suffer from chronic insomnia. There are only a few studies that have described the course and duration of insomnia. There was a study done which suggested a link of insomnia in the middle aged. However, very little is known about chronic insomnia incidence, especially the number of new cases per year.

Studies have recently found that are there is a greater prevalence of insomnia among older people perhaps as a result of declining health or residing in an institution. In addition, insomnia has been shown to have a greater occurrence among women especially after menopause. Studies have also found that divorced, separated, or widowed people have more insomnia than married people. Moreover, some studies suggest that lower education and lower income also have shown to be factors in the increase of insomnia rates.

Insomnia consequently has been correlated with a high health care utilization. The cost of healthcare due to chronic insomnia is estimated to be tens of billions of dollars annually. Only a few studies have shown the effects of insomnia on everyday life. One such study has clearly linked chronic insomnia to the number of work days missed. Other studies show that insomnia is directly related to impaired work performance. Moreover, in yet another study a link was found between chronic insomnia and impaired memory and

cognitive functioning. Lab studies have linked sleep loss to psychomotor and cognitive functioning leading to an increased number of falls in elderly people.

It is important to know what normal sleep is in order to treat insomnia correctly. Normal sleep is falling asleep with ease which varies from person to person. Normally people take around 5 to 15 minutes to fall asleep. Stage N1is the lightest stage which is only comprises about 10% of sleep time. This is the first stage when one initially drifts off to sleep. Stage N2 is when a person loses awareness of anything going on around like stimuli, and is the most common stage of sleep. Stage N3 is known as the slow wave of sleep and is the most restorative type when the body can relax and repair itself from the day before. Stage R is known as the REM stage, or rapid eye movement. This is the most active time of the sleep cycle where brain and body functions.

There are many myths that can affect sleep and insomnia treatment. One of the biggest misconceptions is that insomnia medications improve sleep. However, it was found that sleeping pills decrease sleep quality and can cause side effects such as grogginess and drowsiness. It also can cause dependency, and change sleep cycle altogether. For example, benzodiazepines are prescribed many times for sleep but it has a tendency to suppress the slow wave sleep stage. This is the stage that as mentioned before is essential for restorative sleep. In addition, the effects of decreased slow wave sleep are not clearly known.

Another common myth that is held about sleep is that the longer amount of time one spends in bed will increase the chances of sleeping longer. However, this can cause sleep to be decreased and the patient may have negative associations with the bed. Thus, it hinders sleep. The idea behind spending more time in bed being negatively reinforces the idea that the bed is not a place that is conducive for sleep.

One common method to treat insomnia is called CBT which is a practice that uncovers the patient's current sleep pattern and activities that negatively affect sleep. The patients talk about many of the potential issues such as the particular cause of decreased sleep quality, the prevalence of tossing and turning, the feeling that the brain cannot be turned off at night, or other stimulus that is causing the patient to be awake. Many factors are considered such as smoking that makes it tougher to fall asleep if done right before bedtime. Sleep logs are very helpful techniques in order to keep track of the length of sleep and see how sleep progresses over the course of several weeks.

The first step in sleep strategy is for the patient to observe their sleep patterns. Gathering data is important in figuring out the link between patterns and sleep quality. There are several worksheets that are available to track sleep habits and figure out what is hindering sleep quality such as a recent life change, caffeine intake, napping, or TV watching. Many different things can affect sleep, and once the sleep habits are identified, it is easier to pinpoint the things that will affect sleep. Alcohol or drinking a few cups of coffee may impact sleep. If those things are noted, then it is easier to change those habits or eliminate those things from the daily routine. Sometimes a big meal before bedtime that is excessively sugary or spicy may also cause heartburn that decreases sleep.

Restricting time in bed is also an effective strategy for treating insomnia. This is another reason to prove that collecting sleep data is crucial and gives an idea of how long the patient is actually sleeping. By restricting time in bed, the patient usually will start to get more restful sleep. Thirty minutes prior to bed ,the patient must establish a routine which enables the body to relax such as listening to smooth music, taking a bath, or reading a book.

The non-benzodiazepines are known as sedative hypnotics such

as Lunesta and Ambien. These may have unwanted effects such as respiratory issues and can also lead to psychological and physiological dependence. Some of these hypnotics can cause what is called rebound insomnia. Since this class of drugs is also addictive, people may become dependent on it for a good night’s sleep.

Some over-the-counter remedies such as melatonin, valerian root, and kava are not that effective and are not regulated by the FDA. That means they are not tested for efficacy or safety. Some study results found that a few products did not contain sufficient amounts of the ingredient and in fact, contained only half the amount that was stated on the bottle. One even contained a poisonous metal.

There are some non-pharmacological approaches to treating insomnia such as CBT or cognitive behavioral therapy. This is one of the most successful methods of treating sleep disorder. One form of CBT is TaiChi which is a gentle and slow form of exercise which uses deliberate movements and deep breathing to relax the muscles and calm the mind. It has shown to be also effective at increasing sleep quality while improving mood and concentration during the day.

A high correlation was found between sleep and depression. In fact, it was found that people who were treated for insomnia along with depression had a high chance of a full recovery from depression. This seems to make sense as depressed patients usually suffer from chronic insomnia and is awake at all hours. In addition, depression is the most common mental disorder in America. Almost half of those patients suffer from insomnia. It was also assumed that insomnia was a result of depression but new studies indicate that insomnia can precede depression.

Another misconception is that people have no control over their sleep. However, there are techniques a person can do to get a good night’s sleep. Moreover, once these are given

identified, and then it becomes easier to pinpoint what affects sleep and adjust habits accordingly. This can ensure a good night sleep. However, it requires lots of attention including what food and drink is consumed, activities that are performed throughout the day, and timing of specific activity that may disrupt sleep. In doing this, it is easy to target what activities can induce sleep and what activities hinder sleep.

The sedatives and hypnotics, the two classes of sleep medications, work by increasing the neurotransmitter, GABA or gamma amino butyric acid, in the brain. Since it is a neurotransmitter that communicates with other nerve cells to cause drowsiness, GABA is a key reason people fall asleep. Lack of GABA may significantly reduce sleep and this in turn may cause a whole host of issues. Two sedative-hypnotics which are zolpidem and zaleplon have limited side effects and good efficacy.

There are a variety of hypnotics for insomnia. For example, Ambien (zolpidem tartrate) may be used for middle of the night waking followed by trouble getting back to sleep. It also may be used to improve motor symptoms in those with Parkinson’s Disease. Usually, hypnotics have different half-lives (time it takes for half the medication to be cleared from the body.)The longer the half-life, the more the medication accumulates in the body causing significant drowsiness as well as medication interactions.

Some side effects of hypnotics include talkativeness, palpitations, headache, nausea, confusion, euphoria, weakness, tremor, and depression. Some of the GI symptoms that may occur are heartburn, nausea, vomiting, diarrhea, and epigastric pain, to name a few. These are limiting factors that the prescriber must consider before prescribing these medications. A thorough evaluation of the patient’s medical history, as well as substance abuse history, should be taken into account before prescribing these medications. For example, Ambien is a

controlled substance with a chance for abuse so should thus be limited in patients with a drug abuse history.

If a patient has a history of liver, kidney, or respiratory disease, this may affect the medications the patient can take as most are eliminated through the liver or kidney. In addition, a class of hypnotic called benzodiazepine when combined with alcohol, antidepressants, or other sedative medications may cause a resultant cognitive slowing. Thus, it becomes very easy to have an accident while driving, walking, or standing still.

Tagamet, oral contraceptives, isoniazid, and Antabuse if taken with benzodiazepines, may cause a decrease in the elimination of the benzodiazepine from the body. This may result in an increase in sedation and cognitive impairment. Selective serotonin reputable inhibitors or SSRIs when taken with benzodiazepines can cause cognitive impairment. Serzone or Nefazodone, when taken together with Xanax or alprazolam, may cause alprazolam to be eliminated slower. This leads to cognitive impairment.

Smoking can increase the elimination of benzodiazepines in the body thus reducing the effect of the benzodiazepines. Another significant effect is that it can increase levels of digoxin in the body and cause digoxin toxicity. This is a very significant interaction as many people take digoxin to regulate the heart rate and thus it is critical that the prescriber take a thorough history of the patient before prescribing any medications. Failure to do so may have deadly consequences.

Certain antifungals such as Diflucan, Sporanox, and ketoconazole may increase the concentration of zolpidem leading to cognitive impairment. It is very critical to adjust doses of zolpidem when a patient is on antifungals. Rifampin may cause a decrease in zolpidem as its mechanism of action causes zolpidem to be eliminated quicker than usual.

Sedatives and alcohol are not a good mix and should thus be avoided. Opiates by itself can cause significant cognitive impairment and may interfere with functions such as driving that require concentration. Therefore, opiates such as codeine, sedatives, and alcohol should not be taken together.

There are some examples of non-barbiturate sedative medications called benzodiazepines that include diazepam, triazolam, temazepam, quazolam, estazolam, and flurazepam. Flurazepam has a very long half-life of 11 days that makes it very hazardous to prescribe to the elderly. The elderly are already predisposed to falls and the addition of flurazepam to their night time medications makes it more likely that an accident may happen. These classes of drugs have a variety of uses such as a sleep aid, muscle relaxant, anti-anxiety medication, and anticonvulsant. However, there may be significant side effects such as toxicity and dependence that may occur with these drugs.

These drugs became available during the 1970s and were much safer than the medications that had come before it. Temazepam and estazolam have half-lives similar to 8 hours of sleep. However, triazolam has a slow onset of action which does not make it an ideal sleep aid. All benzodiazepines can cause respiratory depression especially in those with preexisting pulmonary issues to, and it may also lose its efficacy the longer a patient takes it.

In general, the number of sedative and hypnotic sleep aids prescribed has declined within the last thirty years despite efficacy and safety of the current drugs. One of the main reasons for decline is the side effect profile of many sedative and hypnotic sleep medications. In addition, a greater emphasis has recently been placed on non-pharmacological interventions such as sleep hygiene, meditation, relaxing music, and sleep-inducing scents like lavender. This is a healthier approach than prescribing a sleep aid. From side effects like daytime somnolence to

dependence issues, it is much wiser to start with non-pharmacological interventions first.

The physician should make a careful diagnosis before instituting the use of pharmacological intervention. Usually, these medications are only meant for short-term use. The long term use of insomnia medication has been linked to depression and sedative and hypnotic dependent sleep. Sometimes a sleep disorder may be due to anxiety or panic disorder. In these cases, it is acceptable that the patient follow a long-term regimen for the sleep disturbance.

Surprisingly, ethanol is a widely used sleep medication which with prolonged use, can lead to tolerance, dependence, diminished sleep quality, and length of sleep cycle. Some OTC products that are prescribed contain diphenhydramine which has severe sedative properties. It is also not recommended for use in the elderly due to the chance of falls. In addition, it can lower the seizure threshold in patients with epilepsy.

The non-benzodiazepine class includes eszopiclone, chloral hydrate, zaleplon, and zolpidem. The mechanism of action that these drugs exert its effects is at the GABA receptors. Zolpidem has a half-life of 6-8 hours while zaleplon has 3-4 hours. Reports of daytime somnolence, as well as memory loss, have been reported. The side effects of these medications are very mild though. Zolpidem has greater sleep inducing effects while zaleplon has fewer side effects.

The barbiturates are a class of drugs that are not prescribed as often as the benzodiazepines and non-benzodiazepine medications due to its strong side effect profile and rebound effects from withdrawal. Also, benzodiazepines and non-benzodiazepines are more readily available. Examples of these drugs are phenobarbital, secobarbital, butobarbital, and mephobarbital.

Many patients who have insomnia are treated with sedating

antidepressants. This is due to the fact that many insomnia patients often suffer from depression. Although the antidepressants have sedating effects, they also exhibit side effects that are undesirable such as the chance of overdose with the tricyclic antidepressants, as well as anti-cholinergic effects. Some of the antidepressants used to treat insomnia are amitriptyline, nortriptyline, trazodone, mirtazapine, and nefazodone. Some of the antidepressants in the SSRI class are sedating such as paroxetine. However, most of the drugs in the SSRI class cause insomnia.

Some medications that may induce insomnia are those that affect the neurotransmitters such as norepinephrine, acetylcholine, and serotonin. Some of the over-the-counter medications that can cause insomnia include decongestants, weight-loss agents, ginseng, and high-dose B vitamins. Some prescription medications that also can cause insomnia are thyroid replacement drugs, oral contraceptives, antihypertensives, and other medications.

Some people suffer from daytime somnolence with its prevalence being about 5 to 15% of the general population. This can be a potentially hazardous problem especially when those who suffer daytime somnolence are behind the wheel, performing tasks at work that require great concentration, or even walking or taking care of young children.

Those who suffer from daytime somnolence will most likely need to have a sleep study done and should be evaluated for possible obstructive sleep apnea. The treatment for obstructive sleep apnea is a CPAP machine which keeps the airway open and thus ensures a better night sleep. The symptoms of depression which cause daytime sleepiness may be hard to distinguish from the symptoms of obstructive sleep apnea and thus can make diagnosing difficult. There are other neurological diseases that may also cause daytime sleepiness. In any case, this is a dangerous condition that must be diagnosed and treated as soon as possible.

There are a number of medications used to induce alertness in those who suffer from daytime sleepiness such as methylphenidate, dextroamphetamine, and pemoline. The notable side effect with pemoline however is that it may cause hepatic toxicity. Dextroamphetamine and methylphenidate are highly addictive and are in the schedule 2 class. There are some drugs like modafinil that are less addictive than methylphenidate and dextroamphetamine which effectively treat narcolepsy it is in the schedule 4 class and is less likely to be abused. There are some drugs that may interact with modafinil which are most notably theophylline products, gengraf, Neoral, Sandimmune and hormonal birth control whose effectiveness may be reduced.

There are some things during the sleep state which are notable. For example, parasomnias are sleep disorders that occur during arousal or sleep state transition. These disorders are usually associated with waking from deep sleep during the first period of deep sleep that occurs between 1 and 3 AM. Disorders of arousal during sleep include sleep terrors, sleepwalking, and confusional arousals. In general, these are a problem in children which disappears in most cases in adolescence.

There are some medications that decrease respiration due to its use. Those medications include benzodiazepines, barbiturates, and some narcotics which can promote respiratory failure in patients with COPD, sleep apnea, and lung disease. These drugs can also increase the occurrence of obstructive sleep apnea.

There are a variety of over the counter sleep aids which are available such as Nytol, Sominex, Unisom, Simply Sleep, Benadryl, and Extra Strength Tylenol PM. It is advisable to that the patient talk to the doctor or the pharmacist for advice on taking these drugs. Many of these medications contain diphenhydramine which cause sedative effects and can increase the probability of getting into an accident or

falling or other impairment-related activities. Other side effects of over-the-counter sleep medications include decreased cognitive function, delirium, dry mouth, blurred vision, urinary retention, constipation, and increased risk of intraocular pressure in those with narrow angle glaucoma.

Patients sometimes drink an alcoholic beverage before bedtime in order to increase sleep time. Although alcohol does decrease the time it takes to get to sleep, drinking large amounts of alcohol has shown to decrease sleep quality and increase nighttime awakenings. For alcoholics, this is a poor treatment choice. In recent years, melatonin, which is a natural hormone produced by the pineal gland, has been coming to the forefront as a sleep aid. It is not regulated by the FDA and contains different amounts depending on the brands. This makes it very hard to study. There is little evidence that exist for this drug in the treatment of insomnia. Short-term use has shown to be acceptable, but there is no safety information for the long-term use.

It is crucial for healthcare providers to be knowledgeable about sleep disorders and its treatments in order to counsel patients effectively on problems associated with chronic insomnia. It is easy to advise patients to take an over-the-counter prescription medication such as Simply Sleep or Benadryl. However, it takes a skilled healthcare professional with knowledge who will take the time to listen to the patient and recommend over-the-counter medications if appropriate or provide referrals. However, it is important to realize that not every patient is a candidate to take over-the-counter medication and they may have conditions that make taking such sedative medications prohibitive.

Insomnia is a common problem and requires skill from the healthcare providers in order to counsel, advise, make recommendations, as well as conduct follow-ups with patients. It is critical with kids and elderly people that extreme caution is exercised if asked for product recommendation.

Health care workers must be cognizant that the elderly are susceptible to falls and must take critical measures in order to reduce that likelihood. Falls may result in broken bones and hips that can lead to great consequences for the patient down the road. It is with this knowledge of insomnia and its treatments that we can move forward and be confident healthcare professionals. It is up to us to be knowledgeable about all the options for insomnia in order that we may correctly lead our patients in the right direction. This in turn will make a great impact on our patients and will make us better healthcare professionals.

References:

1. RxList; Sleep Disorder Medications; http://www.rxlist.com/sleep_disorder_medications-page9/drugs-condition.htm Nov 15, 2012.
2. Mayo Clinic; Insomnia treatment: Cognitive behavioral therapy instead of sleeping pills; http://www.mayoclinic.org/diseases-conditions/insomnia/basics/causes/con-20024293 Feb 11, 2014.
3. Huffington Post; Mind-Body Therapies to Ease Insomnia; Michael Breus; http://m.huffpost.com/us/entry/6115592 Nov 10, 2014.
4. New York Times; Sleep Therapy Seen as an Aid for Depression; Benedict Carey; http://mobile.nytimes.com/2013/11/19/health/treating-insomnia-to-heal-depression.html?pagewanted=all&_r=0 Nov 18, 2013.
5. Chicago Tribune; Light from electronic screens at night linked to sleep loss; Monica Eng; http://articles.chicagotribune.com/2012-07-08/news/ct-met-night-light-sleep-20120708_1_blue-light-bright-light-steven-lockley July 8, 2012.
6. Sleep Foundation Website; National Sleep Foundation Position Statement: Insomnia Treatment http://sleepfoundation.org/insomnia/content/treatment ;

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