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Sleep Disorders

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Section 1: Introduction

Sleep disorders affect over 70 million Americans (1) and are linked to chronic diseases such as diabetes, cardiovascular disease, obesity, and depression (4). Many healthcare providers are not aware of the significant impact that sleep disorders can have on their patients' quality of life.

There are many types of sleep disorders such as insomnia, parasomnia, obstructive sleep apnea, narcolepsy, and restless legs syndrome. It is important for healthcare providers to know the risk factors, symptoms, and treatment options for these different sleep disorders. Sleep disorders can be difficult to diagnose and treat due to many different risk factors such as cardiovascular disease, nerve disorders, pain, mental illness, medication side effects, genetics, substance abuse, and irregular sleep schedules (9).

In this course, participants will learn the importance of identifying and treating different sleep disorders, the impact poor sleep has on physical and mental health, and how healthcare providers can help promote optimal sleep to improve their patients' quality of life.

Section 2: Insomnia

Insomnia is defined as "the inability to initiate or maintain sleep" (5). About 30% of adults in the United States report having symptoms of insomnia (1) which makes it the most common sleep disorder. Insomnia is important to address due to its dangerous complications. Insomnia can lead to poor performance at work or school, an increased risk of accidents, chronic diseases, and suicide (3).

Risk Factors

The cause of insomnia is often unknown but can sometimes result from chronic stress (5). There are several risk factors that can contribute to insomnia including (1):

- Older age
- Comorbidities including substance abuse, obesity, depression, and anxiety
- Irregular sleep schedules
- Common stressors such as unemployment, financial instability

Signs and Symptoms

Insomnia is diagnosed by ruling out other potential sleep disorder causes such as medication side effects, substance abuse, depression, illness, or pain (5). Patients must have at least one of the following symptoms related to sleep disturbances despite ideal circumstances for sleep (1):

- Difficulty falling asleep, staying asleep, or waking up early
- Fatigue
- Inability to concentrate or memory impairment
- Poor performance at work or school
- Mood disturbances
- Excessive daytime sleepiness
- Low energy or motivation
- Increased accidents or injuries

- Physical symptoms such as headaches or gastrointestinal issues

Healthcare providers may ask patients to keep a sleep diary to track symptoms and sleep patterns and should include a thorough sleep history (1).

Treatment

The goals of insomnia treatment are to improve sleep quality and to improve any related daytime side effects (1). A combination of medications and behavior therapies have been shown to be most effective in treating insomnia (4).

Psychological, physical, and nutrition therapies can all be helpful in treating insomnia. Psychological therapies include:

- Medications
- Hypnosis
- Music therapy
- Relaxation techniques
- Cognitive behavior therapy

Cognitive behavior therapy (CBT) has been shown to give the best results (3). CBT typically consists of 4-8 therapy sessions and has been shown to be as effective as medications (3).

Medications used for treatment can include benzodiazepine receptor agonists, sedating antidepressants, hypnotic treatment, and other sedating agents (1). Patients can receive a combination of these medications and they are meant to be used for short term relief (1).

Physical therapies include:

- Acupuncture
- Massage
- Spinal manipulation

Nutrition therapies include:

- Special diets
- Supplements
- Herbs
- Probiotics

Overall, these treatments can improve not only insomnia, but both physical and psychological health conditions (3). Providers will measure various outcome indicators including:

- Total sleep time
- Number of awakenings during sleep
- Time it takes to fall asleep
- Positive association to sleeping
- Improvement of daytime side effects

Section 2 Personal Reflection

What might be some potential barriers to patients seeking treatment for insomnia?

Section 2 Key Words

Insomnia - The inability to initiate or maintain sleep (5)

Excessive daytime sleepiness - Irresistible urge to fall asleep (16)

Hypnosis - Therapy to allow behavior modification

Cognitive behavior therapy (CBT) - Therapy to challenge negative patterns of thought

Section 3: Parasomnia

Parasomnia is defined as “acting in unusual ways while falling asleep, sleeping, or waking up” (9). Parasomnia includes conditions such as sleepwalking, bedwetting, night terrors, and sleep paralysis. It is important to address parasomnia and ensure patients have safety precautions in place for any potentially harmful complications.

Risk Factors

The exact cause of parasomnia is often unknown, but there are many different risk factors that could contribute to the different types of parasomnia. These risk factors include:

- Family history
- Age
- Irregular sleep schedule or any condition that could disrupt sleep
- Comorbidities including substance abuse, obesity, depression, and anxiety

Parasomnia is often more common in children due to their underdeveloped sleep cycle (6). Issues such as frequent bedwetting in older children, sleepwalking, and night terrors are often seen in childhood.

Any condition that disrupts sleep could also contribute to parasomnia. These issues can include acute or chronic health conditions and external factors such as (6):

- Fever
- Stress
- Pregnancy
- Head injury
- Neurological diseases such as Parkinson's, multiple sclerosis, brain tumor, or stroke
- Pain

Other sleep disorders like obstructive sleep apnea, restless leg syndrome, and narcolepsy can contribute to parasomnia as these disorders often disrupt the sleep cycle (6). The variety of potential causes makes the individual cause of parasomnia difficult to diagnose.

Signs and Symptoms

The signs and symptoms of parasomnia can be divided into two categories based on the sleep cycle: rapid eye movement (REM) symptoms and non-REM symptoms (6).

The sleep cycle consists of four stages that the body cycles through several times per night (17). Stages one through three are considered non-REM sleep where the

body gradually moves into deep sleep. Stage four is REM sleep where the body enters a deep dream state of sleep (17).

Non-REM symptoms include physical and verbal activity with the patient not remembering or only partially remembering their activities. These symptoms are often reported by people living in the same home and include:

- Waking up suddenly and feeling terrified
- Sleepwalking or sleep talking
- Waking up confused and disoriented
- Appearing awake but not responding to attempts of interaction
- Bedwetting in older children

REM symptoms are seen during the time when vivid dreaming occurs in the sleep cycle (6). These symptoms are often remembered by the patient and include:

- Night terrors that cause feelings of stress, anxiety, and fear
- Sleep paralysis
- Trouble falling back to sleep

Night terrors are more likely to occur due to stress or trauma, fevers, alcohol use, or extreme lack of sleep (6). Sleep paralysis is often attributed to an extension of REM sleep for a short period after awakening (6).

Healthcare providers may ask patients to keep a sleep diary to track symptoms and sleep patterns or involve others that live with the patient to track symptoms. Parasomnia diagnosis includes a thorough sleep, medical, and family history. Healthcare providers may also order a sleep study and an electroencephalogram (EEG) to diagnose parasomnia (6).

Treatment

Treatment for parasomnia starts with treating any existing health issues that could be contributing to the parasomnia symptoms (6). Common treatments for parasomnia include incorporating good sleep habits, psychological therapies, and safety precautions (6). Medications are not regularly used for parasomnia treatment. (6).

Good sleep habits include:

- Turning off lights, TV, electronic devices in the bedroom
- Regulating bedroom temperature
- Avoiding stressors before bedtime such as caffeine and exercise
- Maintaining a consistent sleep time and wake time
- Limiting alcohol and substance use

Psychological therapies include:

- Hypnosis
- Relaxation therapy
- Cognitive behavior therapy

It is also important to have safety precautions in place when treating parasomnia as many of these conditions can cause physical harm to the patient or their partner (6). Safety precautions include:

- Removing dangerous items from the bedroom
- Installing alarms on external doors and windows
- Padding edges of furniture and the floor

- Using plastic cups for bedside water
- Sleeping in separate beds if the patient exhibits aggressive behaviors

Safety precautions may be discontinued as the patient's symptoms subside, but it is important to prevent the dangerous symptoms of parasomnia.

A combination of these therapies may be used to treat parasomnia. Providers will measure various outcome indicators including:

- Number of awakenings during sleep
- Improvement in parasomnia symptoms
- Lessened frequency of parasomnia episodes
- Improvement in any comorbidities or external factors

Section 3 Personal Reflection

What differences would you expect to see in treating parasomnia in children versus adults?

Section 3 Key Words

Parasomnia - Acting in unusual ways during the sleep cycle (9)

Night terrors - Vivid dreams causing feelings of fear or anxiety and sudden awakening (6)

Sleep cycle - Multiple stages of sleep that the body cycles through multiple times each night (10)

Rapid eye movement (REM) - Stage of sleep cycle that is associated with dreaming (10)

Sleep paralysis - Unable to move during sleep or upon awakening (6)

Sleep study - Test that measure sleep patterns and response to sleep disorders (12)

Electroencephalogram (EEG) - Test that measures electrical activity in the brain using electrodes

Section 4: Obstructive Sleep Apnea

Obstructive sleep apnea (OSA) is when the muscles in the throat relax during sleep, blocking the airway and causing apnea episodes (2). The apnea episodes trigger the brain to wake up enough to open the airway which disturbs the sleep cycle (17).

OSA is categorized as mild, moderate, or severe. Mild OSA is when patients have mild symptoms with 5-15 apnea episodes per night. Moderate OSA is when patients have 15-29 apnea episodes per night. Severe OSA is when patients have debilitating symptoms with 30 or more apnea episodes per night (17).

About 25 million adults in the United States and 20% of older adults suffer from OSA (1). OSA is important to address due to its dangerous complications and increased risk of serious health conditions (2).

Risk Factors

OSA can be caused by many different factors. These risk factors include:

- Older age
- Family history
- Obesity

- Lifestyle habits such as alcohol and substance abuse, lack of exercise, and diet
- Structural abnormalities such as an underbite, smaller jaw, large tongue, neck, or tonsils

Patients with OSA have been found to be at an increased risk for other serious complications such as cardiovascular disease, diabetes, depression, and anxiety. OSA has been found to be a precursor of cardiovascular diseases such as hypertension, arrhythmias, coronary artery disease, and heart failure as the lack of oxygen during sleep puts pressure on the heart (17).

Signs and Symptoms

OSA is diagnosed with a sleep study which allows healthcare providers to determine how many apneic episodes patients experience overnight (17). Patients can do these tests either at home or in a sleep study clinic, but results are found to be more accurate when done in a clinic (1).

It is common for patients to not realize they have symptoms of OSA as they often do not remember waking up periodically during the sleep cycle (17). Symptoms of OSA can be categorized as awake symptoms and sleep symptoms.

Awake symptoms include:

- Excessive daytime sleepiness
- Feeling tired when awakening even when getting adequate hours of sleep
- Difficulty focusing
- Headaches especially when awakening
- Sexual dysfunction

Sleep symptoms include:

- Periodic gasping or snorting interrupting sleep
- Snoring
- Apnea episodes during sleep
- Night sweats
- Insomnia
- Restless sleep

OSA can also be diagnosed in children, although uncommon. Symptoms of OSA in children include:

- Hyperactivity
- Difficulty focusing in school
- Snoring
- Bedwetting
- Sleeping with neck extended
- Night sweats

It is important for healthcare providers to assess these symptoms and treat OSA in adults and children to prevent the risk of dangerous complications.

Treatment

Treatment of OSA is dependent on the underlying cause (4). OSA may be relieved by treating chronic conditions such as cardiovascular disease, hypertension, or obesity.

A common treatment for OSA is positive airway pressure while sleeping (3). Positive airway pressure (PAP) forcibly pushes air into the airway via a face mask to keep the airway open during sleep (3). This treatment can bring fast relief, but is often complicated by patient noncompliance. Many patients struggle to acclimate to the face mask and therefore do not continuously use the masks at night (17). It is important for healthcare providers to explore different face mask options to ensure patient comfort and compliance.

Other treatment options include:

- Using supportive pillows to avoid sleeping supine
- Nasal sprays or nose strips to keep the nasal passages open
- Mouthpiece to keep the jaw and tongue from blocking the airway
- Nerve stimulator to help push the tongue forward during sleep
- Surgery

There are several surgeries that can help treat OSA depending on the cause. Somnoplasty is a surgical procedure that reduces soft tissue around the airway. Uvulopalatopharyngoplasty (UPPP) removes the uvula and soft tissue around the airway. Healthcare providers may also suggest a septoplasty that reduces soft tissue in the nose to keep the nasal passages open. Jaw surgery is most helpful if the cause of OSA is structural. Tonsillectomy and adenoidectomy removes the tonsils and adenoids which widens the airway. This option is most helpful in children diagnosed with OSA (17).

Lifestyle changes can often prevent and treat OSA. Healthcare providers should encourage patients to adopt lifestyle changes such as a heart healthy diet, consistent exercise, weight loss, and healthy sleep habits in order to prevent OSA or worsening symptoms.

Section 4 Personal Reflection

What would be some pros and cons for suggesting surgical options for treating OSA?

Section 4 Key Words

Obstructive sleep apnea (OSA) - Sleep disorder where the muscles in the throat relax during sleep, blocking the airway and causing apnea episodes (2)

Apnea - Pauses in breathing that happens when the airway is blocked (17)

Positive airway pressure (PAP) - A machine that forcibly pushes air into the airway during sleep to keep the airway open and prevent apnea episodes (17)

Somnoplasty - A surgical procedure that reduces soft tissue around the airway (17)

Uvulopalatopharyngoplasty (UPPP) - A surgical procedure that removes the uvula and soft tissue around the airway (17)

Septoplasty - A surgical procedure that reduces soft tissue in the nose to keep the nasal passages open (17)

Tonsillectomy and adenoidectomy - A surgical procedure that removes the tonsils and adenoids which widens the airway (17)

Section 5: Narcolepsy

Narcolepsy is rare compared to other sleep disorders, but can cause major life disturbances for patients (14). Narcolepsy is defined as “excessive daytime sleepiness combined with sudden muscle weakness” (5) and occurs because the brain is unable to regulate its sleep cycle.

There are two types of narcolepsy: type 1 and type 2, both have similar symptoms. Narcolepsy type 1 includes cataplexy and low levels of hypocretin. Narcolepsy type 2 exhibits the same symptoms but does not include cataplexy or low levels of hypocretin (14).

Risk Factors

The cause of narcolepsy is often unknown, but it has been linked to low levels of hypocretin and genetics (14). Narcolepsy has also been linked to certain acute events such as:

- Upper airway infection
- Infections affecting the central nervous system
- Head injury
- Sarcoidosis
- Stroke

Patients with narcolepsy are at higher risk for psychological and social issues such as depression, anxiety, and social withdrawal (11). It is important to correctly diagnose and treat narcolepsy to improve patients' quality of daily life.

Signs and Symptoms

The cardinal symptom of narcolepsy is excessive daytime sleepiness Patients may feel refreshed after naps, but soon return to excessive daytime sleepiness (14). Other symptoms of narcolepsy include:

- Sleep attacks
- Cataplexy

- Difficulty focusing
- Frequent interruptions in sleep cycle
- Hallucinations when falling asleep or waking up
- Sleep paralysis

Patients may not exhibit all of these symptoms and symptoms may present much later after diagnosis. Because symptoms can be attributed to other sleep disorders, narcolepsy can often go undiagnosed (14). To diagnose narcolepsy, healthcare providers will review patient symptoms and conduct a thorough medical and family history. Providers may also order a sleep study or a spinal fluid test to test hypocretin levels (14).

Treatment

The goal of treating narcolepsy is symptom improvement, safety precautions, and improving quality of life (14).

There are several types of medications to help with the symptoms of narcolepsy. Wakefulness-promoting medications such as modafinil and methylphenidate can help with excessive daytime sleepiness. Solriamfetol is a newer medication that has been shown to be equally effective with excessive daytime sleepiness. Sodium oxybate has also been shown to help with many different symptoms of narcolepsy, but may take weeks to reduce symptoms (14).

Behavior and lifestyle changes to improve symptoms of narcolepsy include:

- Scheduled naps
- Avoiding alcohol and substance use
- Maintaining a balanced diet

- Safety precautions such as safe driving and fall prevention
- Good sleep habits such as turning off lights and electronic devices and regulating bedroom temperature

There is no cure for narcolepsy, but medications and lifestyle changes can help manage symptoms (11). It is important for healthcare providers to take time to ensure that treatment is effective for each individual patient.

Section 5 Personal Reflection

What reasons would a patient with narcolepsy exhibit social withdrawal?

Section 5 Key Words

Narcolepsy - chronic disorder that combines excessive daytime sleepiness with suddenly muscle weakness (5)

Hypocretin - neurotransmitter that helps regulate sleep (11)

Sleep attacks - falling asleep without warning (16)

Cataplexy - sudden muscle weakness and loss of voluntary control over muscles. Can be caused by strong emotions such as laughter, fear, or stress (11)

Section 6: Restless Legs Syndrome

Restless legs syndrome creates aches and pains in legs often while falling asleep (5). It is reported that 5-10% of adults in the United States suffer from restless legs syndrome (15). Patients with restless legs syndrome often have to get out of bed to relieve the aches and pains and therefore experience frequent disruptions in sleep.

Risk Factors

Restless legs syndrome can be associated with many different health conditions. Depression, anxiety, cardiovascular disease, and obesity have all been connected to restless legs syndrome (15).

The cause of restless legs syndrome is often unknown, but can include:

- Chronic kidney disease
- Iron deficiency
- Abnormalities in dopamine
- Neurological disorders such as multiple sclerosis, Parkinson's, neuropathy
- Pregnancy especially in the third trimester
- Diabetes

Caffeine, alcohol, and substance use can exacerbate symptoms as well as certain medications (15).

Signs and Symptoms

There is no specific test to diagnose restless legs syndrome. A diagnosis is typically made based on symptoms. Patients must meet five diagnostic criteria (16):

- An uncomfortable sensation relieved by moving legs
- The sensation begins or worsen during inactivity
- The sensation is relieved by activity
- The sensation occurs only in the evening or at night
- The sensation is not due to another health condition

Other symptoms of restless legs syndrome include excessive daytime sleepiness and fatigue (15). In addition to a symptom intake, healthcare providers may also perform a physical and neurological examination and a sleep study (16).

Treatment

The treatment goals for restless legs syndrome is to improve symptoms and improve sleep (15). A combination of medications and lifestyle changes can help improve symptoms.

Lifestyle changes to improve restless legs syndrome include:

- Regular exercise
- Good sleep habits such as turning off lights and electronic devices and regulating bedroom temperature
- Pneumatic pressure therapy
- Hot baths
- Massages
- Acupuncture
- Limiting caffeine, alcohol, and substance use
- Application of heat or cold to legs

There are several types of medications to help relieve symptoms. Dopamine agonists such as ropinirole help decrease the urge to move legs. Anti-seizure medications such as gabapentin block pain signals from the brain to legs. Benzodiazepines and opioids can also decrease symptoms, but are only used in severe cases due to the potential side effects and risk of addiction (16).

Section 6 Personal Reflection

What would be pros and cons for suggesting benzodiazepines or opioids for restless legs syndrome?

Section 6 Key Words

Restless legs syndrome - Sleep disorder that causes an uncomfortable sensation in legs relieved by activity (15)

Dopamine - A neurotransmitter that tells the brain feelings of pleasure

Pneumatic pressure therapy - Inflatable device that compresses legs to improve stimulation (16)

Section 7: Case Study #1

A 55 year old male has made a telehealth appointment with complaints of fatigue, trouble concentrating at work, and frequent headaches. The patient has a history of depression and anxiety. He reports frequent tobacco use and unsuccessfully tried to quit smoking last year. The patient states he was recently laid off from his job as a janitor and is worried about paying his bills. He states his financial stresses are “keeping him up at night”.

1. Which sleep disorder do you think is a likely diagnosis for this patient?
2. What components of a sleep history and physical assessment would you want to know about this patient?

Upon further assessment, the patient states he does not have a regular bedtime routine and has been sleeping in since being unemployed. He states he is often unable to fall asleep even if he tries to go to bed early. He drinks multiple cups of coffee throughout the day and often gets takeout for meals. His physical

examination is within normal limits. Blood pressure 130/70, oxygen saturation 99% on room air, heart rate 70 at rest, body mass index 28.

1. What are the risk factors for insomnia in this patient?
2. What symptoms of insomnia do you find in this patient?
3. What treatment options would you consider for this patient?

Section 8: Case Study #1 Review

This section will review the case study pertaining to insomnia discussed in the previous section. Responses will guide the healthcare provider through a discussion of potential answers as well as encourage reflection.

1. Which sleep disorder do you think is a likely diagnosis for this patient?

   Insomnia is the most likely diagnosis for this patient due to the symptoms of fatigue, trouble concentrating, frequent headaches, and recent life stressors. The patient's report of trouble falling asleep along with the other symptoms are consistent with insomnia.

2. What components of a sleep history and physical assessment would you want to know about this patient?

   It is important to know the patient's bedtime routine, how many hours he is sleeping per night, and how he feels waking up. It is also important to know what medications he is taking, recent illness, pain, alcohol or substance use.

3. What are the risk factors for insomnia in this patient?

   The patient has several risk factors consistent with insomnia including a history of depression and anxiety, regular tobacco use, the stressors of

unemployment and financial instability, and his body mass index indicates he is overweight.

4. What symptoms of insomnia do you find in this patient?

   The patient has symptoms consistent with insomnia including fatigue, trouble concentrating, frequent headaches, and difficulty falling asleep.

5. What treatment options would you consider for this patient?

   The patient could benefit from healthy diet education and limiting takeout for meals, regular exercise to lose weight, and relaxation or cognitive behavior therapy to help relieve stress. Medications could be considered if these treatment options are not sufficient.

Section 9: Case Study #2

A mother has come to your office with concerns about her 8 year old son. She states her son has been waking up in the middle of the night with nightmares and has been wetting the bed. She states “he used to be a great sleeper” and does not understand what changed. The patient has no pertinent medical history and was diagnosed with an upper respiratory infection a week ago.

1. Which sleep disorder do you think is a likely diagnosis for this patient?
2. What components of a sleep history and physical assessment would you want to know about this patient?

Upon further assessment, the patient states he wakes up “scared someone is under his bed and trying to grab me”. His mother states he often wakes up from his nightmares disoriented. She states he wets the bed multiple times a week. His physical examination is within normal limits. Blood pressure 100/65, oxygen

saturation 99% on room air, heart rate 90 at rest, temperature 99 degrees Fahrenheit.

1. What are the risk factors for parasomnia in this patient?
2. What symptoms of parasomnia do you find in this patient?
3. What treatment options would you consider for this patient?

Section 10: Case Study #2 Review

This section will review the case study pertaining to parasomnia discussed in the previous section. Responses will guide the healthcare provider through a discussion of potential answers as well as encourage reflection.

1. Which sleep disorder do you think is a likely diagnosis for this patient?

   Parasomnia is a likely diagnosis for this patient due to the reports of nightmares, bedwetting in an older child, and recent upper respiratory infection.

2. What components of a sleep history and physical assessment would you want to know about this patient?

   It is important to know the patient's bedtime routine, what time he goes to bed, details about his nightmares, if the patient remembers waking up in the middle of the night, and any recent changes to his sleep routine.

3. What are the risk factors for parasomnia in this patient?

   The patient has several risk factors consistent with parasomnia such as his age and recent illness. Parasomnia is most common in children due to their underdeveloped sleep cycle.

4. What symptoms of parasomnia do you find in this patient?

   The patient has several symptoms consistent with parasomnia including frequent bedwetting, night terrors, and waking up disoriented.

5. What treatment options would you consider for this patient?

   There are several optimal treatment options for this patient. A good bedtime routine and consistent bedtime are possible suggestions. The patient could also benefit from cognitive behavior therapy and implementing safety precautions for the bedroom in case symptoms worsen.

Section 11: Case Study #3

A 50 year old female has come to your office with complaints of weight gain, fatigue, and restless sleep. She states she has gained 10 lbs over the past year. Her partner states that she snores in her sleep and tosses and turns throughout the night.

The patient has a history of hypertension that is controlled with medication. The patient reports no tobacco or substance use, and drinks a glass of wine every night with dinner. The patient works as a special education teacher and reports often staying long hours at work. The patient has no surgical history. The patient has a family history of high cholesterol, diabetes, and depression.

1. Which sleep disorder do you think is a likely diagnosis for this patient?
2. What components of a sleep history and physical assessment would you want to know about this patient?

Upon further assessment, the patient states she often works on her computer until going to bed around midnight. She states she snoozes her alarm clock

multiple times in the morning and “drags herself out of bed for work”. She has at least 3 cups of coffee throughout the day and feels dependent on it to make it through the day. Her physical examination is within normal limits. Blood pressure 128/85, oxygen saturation 97% on room air, heart rate 80 at rest, body mass index 30.

3. What are the risk factors for obstructive sleep apnea (OSA) in this patient?
4. What symptoms of OSA do you find in this patient?
5. What treatment options would you consider for this patient?

Section 12: Case Study #3 Review

This section will review the case study pertaining to obstructive sleep apnea (OSA) discussed in the previous section. Responses will guide the healthcare provider through a discussion of potential answers as well as encourage reflection.

1. Which sleep disorder do you think is a likely diagnosis for this patient?

   OSA is a likely diagnosis for this patient due to the recent weight gain, reports of fatigue and restless sleep, and the reports of snoring from her partner.

2. What components of a sleep history and physical assessment would you want to know about this patient?

   It is important to know the patient’s bedtime routine, how many hours she is sleeping per night, and how she feels waking up. It is also important to know what medications she is taking, alcohol or substance use, diet, and exercise habits. If considering OSA as a diagnosis, a sleep study should be considered.

3. What are the risk factors for OSA in this patient?

   The patient has several risk factors consistent with OSA including age, weight gain, regular alcohol use, poor bedtime routine, and hypertension.

4. What symptoms of OSA do you find in this patient?

   The patient has symptoms consistent with OSA including fatigue, feeling tired when awakening, needing caffeine throughout the day, reports of snoring, and restless sleep.

5. What treatment options would you consider for this patient?

   Positive airway pressure (PAP) should be considered for this patient due to her restless sleep and reports of snoring. This should relieve her symptoms quickly. If PAP does not relieve symptoms, mouthpieces, nerve stimulators, or surgery may be considered. The patient should also be educated on lifestyle changes such as a healthy diet, regular exercise to lose weight, and a healthy bedtime routine.

Section 13: Case Study #4 (Narcolepsy)

A 19 year old male has come into your office with complaints of recent trouble concentrating at school, needing multiple naps throughout the day, and being unable to move when waking up. The patient has no pertinent medical history and is in his third year of college. The patient reports he was diagnosed with a concussion while playing soccer 8 months ago.

1. Which sleep disorder do you think is a likely diagnosis for this patient?

2. What components of a sleep history and physical assessment would you want to know about this patient?

Upon further assessment, the patient states he does not have a regular bedtime routine and often “pulls allnighters to study”. He states he has been napping more since his concussion and feels tired again soon after waking up. His physical and neurological examinations are within normal limits. Blood pressure 110/70, oxygen saturation 99% on room air, heart rate 65 at rest.

3. What are the risk factors for narcolepsy in this patient?
4. What symptoms of insomnia do you find in this patient?
5. What treatment options would you consider for this patient?

Section 14: Case Study #4 Review

This section will review the case study pertaining to narcolepsy discussed in the previous section. Responses will guide the healthcare provider through a discussion of potential answers as well as encourage reflection.

1. Which sleep disorder do you think is a likely diagnosis for this patient?

   Narcolepsy is a likely diagnosis for this patient due to his reports of trouble concentrating, multiple naps during the day, and sleep paralysis. The fact that his symptoms worsened after he was diagnosed with a concussion indicates his head injury could be a cause of narcolepsy.

2. What components of a sleep history and physical assessment would you want to know about this patient?

   It is important to know the patient’s bedtime routine, how many hours he is sleeping per night, and how he feels waking up. It is also important to know what medications he is taking, recent infections, and the full extent of his concussion. A sleep study may also be considered.

3. What are the risk factors for narcolepsy in this patient?

   The patient's most prominent risk factor for narcolepsy is his concussion. Head injuries are a big risk for narcolepsy and could be the cause of his symptoms. Social interaction is an important part of development at this age, so the risk of social withdrawal due to narcolepsy should also be assessed.

4. What symptoms of narcolepsy do you find in this patient?

   The patient exhibits several symptoms of narcolepsy including trouble concentrating, frequent naps, and sleep paralysis.

5. What treatment options would you consider for this patient?

   The patient should initiate safety precautions when driving and while sleeping until his symptoms improve. The patient should develop a nap schedule and strict bedtime routine. The patient should also be educated on the importance of a healthy diet and avoiding alcohol and substance use.

Section 15: Case Study #5

A 28 year old female has made a telehealth appointment with complaints of uncomfortable sensation in her legs causing her to wake up frequently at night. The patient reports feeling tired every morning when waking up and feeling frustrated that she cannot stay asleep. The patient is 30 weeks pregnant and has a history of asthma that is well controlled. The patient states this is her first child and she has "always been a good sleeper".

1. Which sleep disorder do you think is a likely diagnosis for this patient?
2. What components of a sleep history and physical assessment would you want to know about this patient?

Upon further assessment, the patient states she is scared to take any medications for her symptoms due to her pregnancy. She states she normally has a glass of wine with dinner, but has stopped all alcohol during her pregnancy. She is taking prenatal vitamins and has an inhaler for her asthma if needed. Her physical examination is within normal limits. Blood pressure 118/65, oxygen saturation 95% on room air, heart rate 75 at rest.

3. What are the risk factors for restless legs syndrome in this patient?
4. What symptoms of restless legs syndrome do you find in this patient?
5. What treatment options would you consider for this patient?

Section 16: Case Study #5 Review

This section will review the case study pertaining to restless legs syndrome discussed in the previous section. Responses will guide the healthcare provider through a discussion of potential answers as well as encourage reflection.

1. Which sleep disorder do you think is a likely diagnosis for this patient?

   Restless legs syndrome is a likely diagnosis for this patient due to the reported symptoms of an uncomfortable sensation in her legs that is waking her up at night. This is the most common symptom of restless legs syndrome and pregnancy is a common cause.

2. What components of a sleep history and physical assessment would you want to know about this patient?

   It is important to know the patient's bedtime routine and how many hours she is sleeping per night. It is also important to know what medications she is taking, a recent iron level, and any caffeine, alcohol, or substance use. It is

also important to ask the patient the five diagnostic criteria questions regarding her symptoms.

3. What are the risk factors for restless legs syndrome in this patient?

   The patient's third trimester pregnancy is a prominent risk factor for restless legs syndrome. This is a common cause and is often relieved after birth.

4. What symptoms of restless legs syndrome do you find in this patient?

   Symptoms consistent with restless legs syndrome include an uncomfortable sensation in her legs that keeps her awake. Her frustration of being unable to sleep and feeling fatigued during the day also contribute to a restless legs syndrome diagnosis.

5. What treatment options would you consider for this patient?

   Lifestyle changes could be considered for this patient such as exercise within the limits of pregnancy, good sleep habits, a consistent bedtime, and pneumatic pressure therapy. Some treatment options would be contraindicated in pregnancy such as massage and medications. The patient should be educated on the fact that symptoms often improve after birth.

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