

Dr. John Marinelli:

Hey everybody. Welcome back for another episode of ENT in a Nutshell. My name is John Marinelli and today we're joined by Dr. Kathleen Yaremchuk to discuss parasomnias and sleep medicine disorders. Dr. Yaremchuk thank you for being here today.

Dr. Kathleen Yaremchuk:

Thank you for asking me John.

Dr. John Marinelli:

And just by way of introduction, this obviously a very large topic and lots of interesting disorders that we can touch on and I think importantly many of them can have significant overlap with the most common disorder that we see as otolaryngologists which is obstructive sleep apnea. And so we'll try and keep it high yield and relevant but I guess maybe the first topic I wanted to ask you about hypersomnia and narcolepsy, maybe if first we could talk about hypersomnia, what is that and what's important to know about that?

Dr. Kathleen Yaremchuk:

So hypersomnia is something that usually leads us down the trail of obstructive sleep apnea. And basically it's the individual that falls asleep, is truly sleepy so we're not talking about being tired. To me, being tired is you're sitting on your couch and you don't want to get up and go do the dishes or cut the grass. Sleepy is you're sitting on your couch and you're falling asleep and that's hypersomnia. Usually, we start the diagnosis with the Epworth Sleepiness Scale and if you have more than a score of 10 on the Epworth Sleepiness Scale, we say that you have hypersomnia. So it's the napping, it's the falling asleep when you're not supposed to. For children, it's usually the paradoxical behavior. When they get really sleepy, then they get more wound up and start to run around and be difficult to manage and can be difficult in the classroom.

Dr. John Marinelli:

Yeah. Those of us that have kids have intimately experienced that for sure.

Dr. Kathleen Yaremchuk:

And the thing that's really important about hypersomnia is to make sure that you get a sleep history. So when you see a patient that is complaining that they're doing poorly at work, at home the spouse is complaining because they're falling asleep, that they don't want to go out for walks, they don't want to do anything, is find out what time they go to bed and what time they get up. And if they're getting less than seven hours of sleep a night, they deserve to have hypersomnia. Every so often though, you're going to find the patient that gets 10 hours of sleep, maybe 12 hours of sleep and yet still when they wake up in the morning, they're not ready to get up and go.

So you will hear terms like unrefreshing sleep so that should set off a red light that you need to ask more about what their sleep is like and what their sleep hygiene is like. It's not uncommon for people to work two jobs or to work shift work. And if they get back at 8:00 in the morning or 7:00 in the morning, then they have to take their kids to school and then pick them up, they're not getting consolidated sleep. Make sure you find out one, if insufficient sleep is part of the hypersomnia, their sleepiness, they've earned it, they deserve it or if it's something else that's going on. And that's when you ask about snoring, that's when you ask about other problems.

Dr. John Marinelli:

I kind of think this leads into narcolepsy. Could we talk a little bit about that?

Dr. Kathleen Yaremchuk:

Narcolepsy is interesting, it's a relatively rare disease but you can still make the diagnosis in patients. And when you find someone that has narcolepsy and you start asking them questions about it, it's pretty clear what's going on. It is when patients fall asleep, they can sometimes feel it coming on but all of a sudden they just drop. They just drop and they're sleeping in front of their computer or anywhere else in mid activity. It's interesting for a lot of reasons, it tends to be familial so they may talk about an uncle Joe that would fall asleep in the middle of a story or at the table or sitting someplace. And so it's not unusual to find that it does run in a family. It can be diagnosed in children and I think the oldest patient I ever diagnosed it in was in their 60s or 70s.

Dr. John Marinelli:

And what is this idea of cataplexy?

Dr. Kathleen Yaremchuk:

It's interesting narcolepsy is brought on by strong emotions it's thought to be but it can be laughter, it can be anger and you get this overwhelming sense that you need of weakness and falling asleep. So not everybody with narcolepsy has cataplexy and the cataplexy is just a loss of muscle tone. Now sometimes it can be subtle. It can be a droop of an eyelid, it can be just a tiny shift in their normal stature so it doesn't have to be the complete loss of muscle tone that someone falls to the floor, but it can be. And sometimes people they'll recognize that a strong emotion will bring it on so they'll teach themselves not to laugh, they'll teach themselves not to have a strong emotion because they don't want to have that weakness or a drop attack or to fall asleep. So they learn compensatory behaviors so as not to bring it on.

Dr. John Marinelli:

And what is hypocretin?

Dr. Kathleen Yaremchuk:

Hypocretin is a neuropeptide and promotes wakefulness. And so it's interesting because many people believe that narcolepsy is an autoimmune condition and that HLA is associated with that. And so the neuropeptide hypocretin is decreased in patients that have narcolepsy. So hypocretin is a neuro peptide it promotes wakefulness, but in narcolepsy there's an absence of it. And most of the receptors are in the brainstem. So if you think of it that way, it is very significant in terms of turning on or turning off your wakefulness. Individuals have a hard time if you do that, Epworth Sleepiness Scale. Usually with people with sleep apnea, they may score 10 to 15 or 16, but the people that have narcolepsy they'll score in the 20s. They'll be the ones that'll fall asleep in any condition. It's not that they're bored, it's not that they're not paying attention, it just comes on and it's an overwhelming condition where they fall asleep. The other thing is that when they wake up from those sleep or those naps, they're fully awake, they're 100% with the program and it's like nothing ever happened.

Dr. John Marinelli:

Is that something hypocretin that we can use to diagnose?

Dr. Kathleen Yaremchuk:

It's not that sensitive and so there are some cases where cerebral spinal fluid they'll do spinal taps to find a decrease in it. And that may be in those cases where it's hereditary more so than those that are, I'm going to say an autoimmune type basis. The pathognomonic way to make a diagnosis of narcolepsy is with a sleep study. So you absolutely positively have to have a sleep study to show this. Most patients, most individuals will not have REM sleep until about 90 minutes into a sleep study. And so if at the time of sleep onset, which is 10 to 15 minutes and you show REM, that is pathognomonic. So you get a sleep study and then the next morning you have a multiple sleep latency test, which is where after eight hours of sleep, someone is put into a room and they are asked to take a nap. And there are five, 20 minute nap periods.

And if an individual shows evidence of sleep-onset REM two or more within those five naps, that is diagnostic of narcolepsy. So five naps but if the first two naps you show REM, you're done, you've made your diagnosis.

Dr. John Marinelli:

And how do we treat narcolepsy?

Dr. Kathleen Yaremchuk:

Narcolepsy is treated usually with medications. And so you use stimulants, it may be Ritalin. It may be Modafinil, Methylphenidate and then there's Gamma-hydroxybutyrate Sodium oxybate for cataplexy, for patients that have cataplexy is the indication for that.

Dr. John Marinelli:

And shifting gears now to the other side of the spectrum and insomnia, could you talk a little bit about what is insomnia and the typical patient that you see in your clinic with that?

Dr. Kathleen Yaremchuk:

Insomnia is difficult. It's patients that feel that they are unable to fall asleep and so I usually differentiate it by sleep initiation, Insomnia versus sleep maintenance insomnia. So individuals that get into bed, they can be exhausted and then as soon as they hit the bed, they're unable to fall asleep. And they may lay there for an hour or two hours, three hours checking the clock, recognizing that they're not getting to sleep and that soon that they're going to have to wake up. So issues of worry, start to make it a self-fulfilling prophecy and in terms of being able to initiate sleep. Difficulty maintaining sleep or sleep maintenance insomnia are those individuals that fall asleep fine and a sleep cycle and I know you've talked about this in a different podcast, usually there's a 90 minute sleep cycle. So you go from a light sleep to REM sleep then we all have an arousal we'll roll over and then go back to sleep.

For individuals with sleep maintenance insomnia, when they get to that light sleep again, that arousal, they wake up, they're 100% awake and then they can't go back to sleep. And so they'll tell a story of going to bed, waking up at 1:00 or 2:00 in the morning, not being able to go back to sleep for a couple of hours, going to sleep and then having to get up at 6:00 in the morning. So they haven't had consolidated sleep and they haven't had the usual seven to eight hours of sleep.

Dr. John Marinelli:

Transitioning now to work up patients with insomnia, is a polysomnogram something that you typically order or how are you working these patients up?

Dr. Kathleen Yaremchuk:

You do not order a polysomnogram or sleep study of any type for insomnia so I'm going to say if anything is contraindicated, a sleep study is contraindicated because you're not going to see anything except somebody that either doesn't go to sleep when you want them to or is awake for most of the study so not important. For insomnia, it's very important in terms of the history. What time do they go to sleep? What time do they wake up? How much time are they awake during the night? And so we usually use a sleep diary to keep track of awakenings, what do they do if they do waken up, are there parts of the house and oftentimes it's not unusual that when a person gets in bed, all of a sudden their eyes pop open, they can't fall asleep. But yet if they go to another room or if they travel and are in a hotel, they'll say, "Oh, this was the best sleep I've ever had." So it's almost a sensitization that if they get into bed, that they're not going to be able to go to sleep. So having a sleep diary, making sure that they don't expect. And sometimes people expect this eight hours of sleep a night and if they get seven and a half hours, they feel like they've failed.

And so one has to pay attention and say, "Much like 98.6 degrees is not the body temperature of every human being on the planet, eight hours of sleep may be a recommendation, but seven hours and 15 minutes is fine. And eight hours and 15 minutes is fine as well. There's a bell shaped curve." You have to also make sure what the sleep hygiene is. I had a patient once who when she came home, she got into bed, she had her dinner in bed, she had the TV on, she did work from her bed. So there was really no differentiation between any other part of her life and what her bed was meant for.

So don't go to sleep with the TV on, make sure that when you get ready to go to bed you plan on going to sleep. Oftentimes with children, we develop a routine and we try to dial them down. You take a warm bath, you brush your teeth, you read a book and then you go to sleep. So the idea that you're going to jump in bed and fall asleep the minute your head hits the pillow is not really reasonable either so one has to be prepared for that. The treatment for insomnia, there's really two.

One is cognitive behavioral therapy, CBT, which is aimed at explaining to a patient what normal sleep patterns are, sleep hygiene in terms of what the bedroom should be like and preparation or if you're an anxious person, how do you dial down? Meditation, relaxation and yoga has been shown to be helpful. The other are sleep aids medications and for many people it's helpful but one has to understand that it's not going to be something that's a lifelong situation. And many people don't want to be addicted to drugs or need a sleep aid for a long-term basis. So cognitive behavioral therapy would be the first choice for those individuals that have long-term history of insomnia.

Dr. John Marinelli:

I feel like a common question from patients or is commonly used at least as melatonin. How do you think about using that in your patients?

Dr. Kathleen Yaremchuk:

I think that melatonin is great, but it really augments their circadian rhythm. So if you're waking up in the middle of the night, melatonin usually takes 45 minutes to kick in and for two to three hours of your additional sleep, it may not get you to where you need to go. So if you've had some time zone changes where you need to acclimate to a new time zone, it may be helpful to you. Remember melatonin is when dusk comes and it's getting you ready for bed and it's not something that you take it and five minutes later, you're going to fall asleep and be sleeping the rest of the time.

Dr. John Marinelli:

And what do you think about the non-benzodiazepine GABA agonist, like the Z drugs?

Dr. Kathleen Yaremchuk:

The Z drugs, Zolpidem, Zaleplon, Zopiclone have less abusive potential but they've also been shown in older patients to be problematic. And so we have read news stories about people taking sleeping pills and doing odd behaviors, we worry about older adults having sleeping pills and then waking up being groggy and falling and having fractures. So I think for short-term usage and I'm going to say, maybe you're on a plane and when you get off, you have to be 100% awake so you want to sleep on the plane. If you have a short-term insomnia issue due to a behavioral problem or a trauma in your life, it probably makes sense. But I don't think anybody would recommend for long-term usage, the sleep aids that we have and would suggest first choice would be cognitive behavioral therapy for those individuals that have a long-term problem with insomnia.

Dr. John Marinelli:

All right. And if we could transition now to the high-yield topic of circadian rhythm disorders, what is important to know about those?

Dr. Kathleen Yaremchuk:

Circadian rhythm disorders occur when there's a change with our endogenous circadian rhythm and the external environment. The circadian rhythm is so important that in 2017, the Nobel prize was given to three American scientists that demonstrated that every cell in the human body had a circadian rhythm. So to understand the importance of disorders, you have to understand that everything that happens is based on a circadian rhythm and whether it's reproductive, whether it's a hormonal, and our cardiac system.

Dr. John Marinelli:

And maybe now we could go into some of the specific types of disorders and perhaps starting with the delayed sleep phase disorder. What's important to know about that?

Dr. Kathleen Yaremchuk:

So delayed sleep phase disorder is a circadian process disorder and so I would not put that into the classification of insomnia. Delayed sleep phase is associated and I'm going to say with teenagers, and basically instead of going to bed at 10 o'clock, they start to go to bed at 11 o'clock or 12 o'clock. And it's well known that in adolescents this is what happens. It's also well known that adolescents need probably nine or 10 hours of sleep a night. And so if they're going to bed at midnight, that means they're not going to be getting up or ready to get up until 9:00 or 10:00 in the morning and yet most of our school systems start at 7:00. So this delayed sleep phase of going to bed later is in contradiction and does not align with what our current needs or desires are for school.

So it's difficult to try to break this habit and basically what you need to do is one, start going to bed earlier, making sure you have dim lights, making sure that you're not exposed to any light, that you don't have your cell phone, your computer, any electronics going, TV and then waking up at the same time as difficult as that may be to try and reset the circadian rhythm.

Dr. John Marinelli:

And is advanced sleep phase disorder just the opposite of that?

Dr. Kathleen Yaremchuk:

Pretty much. And we see that in older adults. And what tends to happen is they start going to bed at 7:00 or 8:00 or 9:00. Now, the other irony about all of this is that as we get older, we need less sleep and so somebody who is older, I'm going to say 70 years old, probably needs seven hours of sleep. And if you're going to bed at nine o'clock at night or eight o'clock at night, then you're going to be waking up at 3:00 in the morning. And so it's not uncommon for individuals with the advanced sleep phase to complain about, "I go to bed, I sleep just fine, but then 3:00 in the morning my eyes pop open and I can't go to sleep" And notwithstanding the fact that we have a 24 hour new cycle. These individuals have a hard time at 3:00 or 4:00 in the morning finding something to do to keep themselves busy.

Now similarly, if you're getting up at 3:00 or 4:00, you're going to want to go to sleep the next... You're going to get sleepy at seven o'clock at night and then it becomes a self-fulfilling prophecy. For individuals with delayed sleep phase, those that want to stay up later and later, they need to have the sunlight first thing in the morning to reset their clock. And for elderly people that are going to bed at seven o'clock, they need to keep the light on as long as possible so that they don't have melatonin surge of darkness and wanting to continue to go to bed earlier and earlier.

Dr. John Marinelli:

And then I know there's a bit of a unique circadian rhythm disorder that's pretty interesting and often times asked about, this idea of a free running disorder. Could you touch on that please?

Dr. Kathleen Yaremchuk:

Free running disorder or a non 24 hour sleep wake rhythm disorder is common in individuals that are blind. When you do not have the retinal thalamic tracked in a functional state that you can't discern light from dark, the whole idea of melatonin, the concept of light, of cortisol, are all disrupted. And so between 50 and 80% of individuals that are blind, have the free running or non 24 hour sleep disorder. What one should think about is the idea that for an individual like this, sometimes their days aren't 24 hours, they may be 25 hours. And so to be able to be on a schedule that works with school, that works with employment, one has to get into a routine. You can't rely on the sun coming up and the sun going down to let you know when it's time to get up and when it's time to go to sleep. So you develop other environmental cues such as an alarm clock, breakfast, coffee, anything that will come together in a routine that allows the individual to know that it's time to start the day.

Dr. John Marinelli:

Okay. And so now if you're seeing a patient in clinic that you think might have a circadian rhythm disorder, how are you working them up?

Dr. Kathleen Yaremchuk:

It's important to recognize that this is a condition where sleep studies are not helpful, and whether you have an advanced sleep state or a delayed sleep phase individual or free running, a sleep study is not going to tell you anything about that. The order or the study that should be done is use of actigraphy. And actigraphy is essentially a wearable that you have that will tell you when an individual is sleeping or awake. And it is usually done for a week or two weeks. And so that you can look at it and see that each night the person goes to bed at 2:00, sleeps eight hours and wakes up, that indicates it's a delayed sleep phase. For the free running, you can see that individuals may go to sleep slightly later each night and that it goes over a 24 hour period. So what one needs to know is that actigraphy is the appropriate study to order, it's usually done for one to two weeks to get a true picture of what an individual's lifestyle sleep-wake pattern is like.

Dr. John Marinelli:

And I know we already kind of wove some of these ideas in with the light therapy, but any other key components of management of these patients that you wanted to mention?

Dr. Kathleen Yaremchuk:

Some of it we have to understand is just part of evolution or maturity. So very common once again for the delayed sleep phase for adolescents. And so for a few years, they need to be going to sleep a little bit later, getting adequate sleep and making sure that if they are going to bed at midnight, that they're not getting up at 6:00 in the morning because then it falls into insufficient sleep.

Dr. John Marinelli:

And transitioning now to restless legs syndrome, the kind of the main last sleep medicine and disorder I wanted to ask you about. Restless leg syndrome, we've heard a lot about it oftentimes. Is that the same thing as periodic limb movements or what are we talking about here?

Dr. Kathleen Yaremchuk:

Restless leg syndrome happens before you go to sleep and it is distinct from periodic limb movements. So restless leg syndrome, what people will say that in the evenings when they get ready to go to bed, they will feel creepy crawlies so their legs start to feel funny and they have to keep moving. And so what relieves the problem is movement of the legs and so this is a clinical diagnosis. And you may know people that are always twitching or their legs are flip-flopping and that kind of stuff, restless leg syndrome usually and I'm going to say in the evening just before you go to bed, but it's really any time when you're not moving them that you get this urge to move. And it also makes it such that you recover or it makes that feeling go away. It is more common in women, it tends to happen during pregnancy and so it's thought to be due to a possible iron deficiency.

The other thing that's interesting about it is the other time people will have problems with it as if they're sitting in a car and if they're not driving. And I had one patient who had a van and he had a bicycle, a stationary bicycle, because if he was there and he was able to keep his legs moving, now his wife would do the driving and he would be on his bicycle moving his legs.

Dr. John Marinelli:

And when you said it's distinct from periodic limb movements, could you go into that a little bit further?

Dr. Kathleen Yaremchuk:

Sure. Periodic limb movements happen when you're asleep and the diagnosis of PLMs is made on sleep study. And in contrast to restless leg which means it happens while you're awake before you go to bed you get the twitchy and urge to move, PLMs happen when you're sleeping. And so the legs will be moving all night long. And this can be a cause of hypersomnolence because when people wake up in the morning, they've essentially been walking all night long. And so the spouse will say that, they can't fall asleep because their bed partner's legs, they're moving, they're walking all night long, the bedsheets, the bed clothes are in a disarray because they're just walking around. And it can be an extreme where literally a person is going... They're whirling dervishes, they're just going in circles because they're kicking all night long.

Dr. John Marinelli:

How do you work these patients up when you're seeing them in clinic?

Dr. Kathleen Yaremchuk:

The patients with restless leg syndrome will give you a very distinct history that we just talked about. About 80% of patients with restless legs have PLM. If you see a patient that has hypersomnolence, problems with the twitchy legs, you get a sleep study. And part of the sleep study, they look at EMG and they will see that the legs are twitching, are moving all night long, sometimes associated with arousals and sometimes not, but that they're very sleepy. One of the things with PLMs is to order a lab test and the lab test is ferritin. And if there's a decrease in ferritin, for the patient to receive iron supplementation. The other things that they can take for this so that it decreases the movement at night are dopamine agonists such as pramipexole, or ropinirole to help. And you usually start with the lowest dose and then from there you titrate it based on what their symptoms are. They should start to feel less tired, the bed partner should say there's less kicking, there's less moving around at night and that their sleep is quieter.

Dr. John Marinelli:

And just to circle back to this to make sure I'm understanding this correctly. So you said 80% of patients with restless leg syndrome have PLMs. Is the idea then that this doesn't always go the other way where most people with PLMs on a polysomnogram don't have restless leg syndrome, is that correct?

Dr. Kathleen Yaremchuk:

Correct, absolutely correct. It's much like snoring and sleep apnea. Not everybody that snores has sleep apnea and not everybody with sleep apnea snores so they can be independent. There's the strong association with RLS and PLMs but once again, PLMs don't... Those patients don't necessarily have the problems before they go to sleep.

Dr. John Marinelli:

Anything else on RLS that you wanted to mention before we move on to the discussion on parasomnias?

Dr. Kathleen Yaremchuk:

Restless leg syndrome has a strong genetic component. If you think of BTBD9 gene, more common in women. And once again, we tend to think it's associated with iron deficiency and so that's why in pregnancy it tends to be more problematic for women at the same time, treating them with iron can be helpful.

Dr. John Marinelli:

Switching gears then to discussion of the parasomnias. Could we just start by defining what is a parasomnia?

Dr. Kathleen Yaremchuk:

Para basically is a Greek word and it means alongside and then somnus is sleep. So a parasomnia basically occurs during sleep, around sleep that you are aware of and others may be aware of in your behavior.

Dr. John Marinelli:



One of the confusing things in my mind was why this is a clinical disorder, the different types of parasomnias. Could you touch on that briefly?

Dr. Kathleen Yaremchuk:

Yeah. Some of the disorders you may see in a sleep study and some you may not. And so when we look at a sleep study and we talk about REM and non-REM, some of these parasomnias are more common during non-REM sleep and some are more common during REM sleep.

Dr. John Marinelli:

How does a patient with parasomnia present to your clinic?

Dr. Kathleen Yaremchuk:

Well, it's interesting. They can present in multiple different ways. Most of the time they will come in with a bed partner and oftentimes they can also occur in children. And so what parents will talk about in terms of the behaviors are that a child wakes up, they're screaming, they're terrified, they can't be consoled or even sleepwalking, that they get up out of bed, they walk, they don't seem to know what's going on, they try to wake them up, lead them back to bed. And so there's concern from the family in terms of safety and if you are disrupting someone else's sleep and as residents and physicians we know what it's like to be on call and someone disrupting your sleep, that it becomes a very important topic for the family and it impacts the family in many different ways.

Dr. John Marinelli:

Could we touch on the different types of parasomnias perhaps starting with the non-REM related parasomnias? Would you mind just go into a bit into that?

Dr. Kathleen Yaremchuk:

We basically talk about non-REM sleep and REM sleep. And non-REM sleep, the best way to think about it, non-REM sleep is where you have a sleeping brain and awake body. And so the things that happen with non-REM sleep, you will not remember. So the types of situations, sleep terrors, and so that is the person that wakes up or a child that wakes up screaming, terrified, cannot be consoled. And if you go to their side and you try to talk to them about it, "What happened? You're okay, everything's fine." Once again, it's a sleeping brain so they don't know and they can't remember. Their body's awake so they're able to scream, they're able to thrash, they're able to do that kind of thing but they cannot remember and so they can't tell you what happened and yet the whole family may be woken up because of screaming terror in the middle of the night. So those are sleep terrors aptly named because the person is terrified. Another one is confusional arousals. Basically someone will wake up, they may if it's a child and there's another sibling in the bedroom, they may get them up. They're not sure where they are, what's going on, why they woke up or what happened. But once again, it's a disruption.

Probably the one that's most concerning to most parents is sleepwalking. This can happen to adults, it can happen to children, it tends to be more common in males than in females, it tends to run in a family. So if a family is telling you about the individual that gets up and walks around, they can't tell you why they're walking around, what they're doing. You'll find them in the bathroom or the kitchen or anywhere else and they won't be able to tell you why they're there or what made them get up. And they probably won't remember that they were ever up. Now, the important thing about how to treat this is that safety is number one because some complex behaviors, they can open a door, they can wander outside, it could be wintertime and they'll be outside in their pajamas.

It can be to the degree that it really is an issue. This is not treated pharmacologically. It is treated with safety and it may be bed alarms, it may be double locks on the doors or alarms on the doors so they can't open and get out and hurt themselves. And there's one that's a variant and it's a sleep related eating disorder. Once again, it's a non-REM disorder parasomnia and it's binge eating and the individual will get up in the middle of the night and they will just gorge and what they may find or the family finds in the morning are dirty dishes, empty pans, boxes, things strewn around the kitchen. And there will also be odd eating behaviors from eating pet food, chalk, ashtray so there's no knowledge of necessarily anything. It's anything is fair game and they'll just find a mess in the morning. And so for some patients, what families will do is put locks on the doors around the cabinets and try to put everything away so that they don't have this in the morning when they wake up.

Most of these non-REM parasomnias occur or will be exacerbated during sleep deprivation. And so making sure that the child, the adult, is getting adequate sleep, that it's not during a stressful time for the family, it helps to consolidate the sleep and they're less likely to have these kinds of problems. And if the patient has obstructive sleep apnea, that obviously can impact their sleep or the quality of their sleep. So sometimes treating the obstructive sleep apnea will help with these conditions.

Dr. John Marinelli:

Okay. And transitioning out of the REM related parasomnias, how are those distinct from the non-REMS which we previously just talked about?

Dr. Kathleen Yaremchuk:

I think the REM sleep behavior disorders are the most fascinating to me when I see patients that have this. Non-REM sleep occurs usually in the earlier parts of the night and the REM sleep behavior disorders happen more in the later part of the night and that's when you have the longer periods of REM in terms of your sleep. So once again, REM is an active mind and an asleep body. And not just asleep, but you're basically a tonic. If someone is having REM sleep and this is diagnosed on a sleep study, but they show tone in the legs and the arms or in the chin muscles, then that's a REM behavior disorder. On history, it's very classic. If the bed partner is in with the patient at the time, it will be a classic story. And what they'll start coming in as they saying, "Well, they're having bad dreams." And that they're kicking, they're fighting, they're doing whatever. But the classic story is from the individual that is having this REM behavior disorder is that they are being chased, they are fighting for their life and it could be a tiger, it could be a pirate, it could be just the worst awfullest thing coming after them and that they are fighting for their life.

And so they kick, they punch, they are going to do whatever they can to do to save themselves. Unfortunately, the bed partner is that bad person that's after them so it's not uncommon that the individual will say that they've punched their wives, their spouse... And it's more common in men, much more common in men. And usually as they get older that they show this. And so the spouse could have a broken nose, could have a black eye. The person who's suffering from this, they feel remorseful, they're incredibly sad about this. I've had people, couples that have come in that have been married 60 years and the individual feels so bad that they have harmed or tried to harm their spouse but they're asleep. And they remember it, they remember when they wake up that they were fighting for their lives, they were being threatened, they were going to do whatever they could do to save themselves but at the same time when they wake up, they're just shocked at what they've done or what happened.

It is associated with an underlying neurological disorder, Parkinson's disease. And so any of the alpha-synucleinopathy will show this type of behavior. The history is what I just described and on a sleep study, it's very obvious they're in REM sleep and yet they have muscle tone.

Dr. John Marinelli:

And how do we think about treatment for these patients?

Dr. Kathleen Yaremchuk:

Well, this REM behavior disorder may precede the diagnosis of their neurological disorder. And so referral to neurology is probably very reasonable at this time to say, "Okay, we know that this individual has REM behavior disorder, they may well have signs of Parkinson's at this time that have not yet been diagnosed or treated so referral to neurology for a full neurologic evaluation is important." There are medications that can be given for this and it's usually the dopaminergic type medicines that are used to help. And once again, because many of these people are elderly, you start with a low dose of clonazepam and it's usually about 0.25 milligrams. And it's one of the type of situations where you monitor to see is the behavior improving. The other medication that's been found to be helpful for this as melatonin and it's not clear why, but that has been shown to be helpful for the REM behavior disorders. Once again, you hate to give anything that's too sedating to individuals that are older because of safety risks.

Dr. John Marinelli:

And then I know there's a couple of subtypes namely recurrent sleep paralysis and nightmare disorder. Could you just touch on the recurrent sleep paralysis perhaps?

Dr. Kathleen Yaremchuk:

Sure. And recurrent sleep paralysis is sometimes I'm not going to say confused but associated with narcolepsy. With narcolepsy, there's sleep onset or sleep... When you're waking up where you feel the individual can't move or they have hallucinations. And so this recurrent sleep paralysis is very much like that, that at the onset of sleep there's a paralysis. The individual may feel like they can't move or when they're waking up, they hypnopompic, paralysis where their eyes may be open but they feel like the arms or the legs of the body they need to wait a little while before they're able to move normally. There is a genetic association, familial association with this. It's interesting because they may describe this to someone in the family, the parents who say, "Well, isn't that what everybody does?" And it's just unusual for them.

Dr. John Marinelli:

And what about nightmare disorder?

Dr. Kathleen Yaremchuk:

All right. So I want to make sure we talk about, we at least compare this. Nightmare disorder is similar to night terrors or sleep terrors. Nightmare disorder however happens and you will have this vivid dream, very real. It happens with REM sleep, but the problem is that it's not a problem, but the nightmare disorder you will remember. And so you will remember everything that happens, you will be concerned, you can tell the story of someone chasing you but at the same time you remember it. You have a nightmare, you remember it and this is a REM parasomnia. The non-REM, the sleep terrors, you don't remember what happened. You just remember that you were scared. So once again with REM, you have the awake brain which makes sense why you remember it. With the non-REM sleep terrors, you don't remember why it is but you're able to act it out.

Dr. John Marinelli:

And I know this has a strong association with a relatively common disorder is that PTSD? Is that right?

Dr. Kathleen Yaremchuk:

Yeah. It is associated with PTSD and prazosin is recommended for the nightmare disorder as well as the PTSD.

Dr. John Marinelli:

I know there's a number of other parasomnias, some interesting ones like exploding head syndrome or sleep enuresis something that has overlapped with OSA in kids for example. Anything else you want to touch on here with some of the other parasomnias?

Dr. Kathleen Yaremchuk:

Yeah. And I think the sleep enuresis is very important. What makes the diagnosis? So most children are expected to be dry throughout the night by about five years of age. The diagnosis of primary enuresis is that by the age of five, two times a week for at least three months, well, if it's primary, it means forever. They've never achieved a dry night. For secondary enuresis, it means at least twice a night for three months that they have a wet bed. About 10 to 15% of seven year old children have enuresis. So the idea that 100% of children by the age of seven do not have this is incorrect. So 10 to 15% of children will have enuresis at the age of seven. And what to remember is that there's about a 15% resolution a year so the number decreases as they get older.

And by the age of 15 years of age, 99% of children will be dry at that point in time. So the question of how serious it is, how quiet it is, and the fact that is maturational and will quite likely resolve on its own is something that you need to remember. Now, if you're getting insufficient sleep or obstructive sleep apnea, that could be a cause. I'm not suggesting that a workup shouldn't be done, but at the same time enuresis all by itself is something that is not that unusual and tends to resolve as part of growing up.

Dr. John Marinelli:

And one other one just has some overlap or some interest in presentation with anti-cathrenia. Could you touch on that?

Dr. Kathleen Yaremchuk:

Cathrenia is an unusual parasomnia but it is stridorous noise that occurs during sleep. And nobody knows, even us, whether it's inhalation or exhalation against a closed glottis but it's a piercing, I'm going to call it a shriek but really a type of stridor that occurs during sleep. And you can imagine that if an individual makes this noise in the middle of the night, you would be concerned. They may well find your way into the office but if you can see that it's a normal exam and that it only happens during the night, having a sleep study may be helpful because it may be demonstrated during that time. And now that we have wearables and all the other things that we can do to collect data at night to record it can help make the diagnosis.

Dr. John Marinelli:

Is that more common in kids or is it about equal?

Dr. Kathleen Yaremchuk:

It's usually in adults, it's more common in adults. And as I said, we don't have any videos to document whether it's inspiration or expiration that the noise occurs but it is one of the conditions that can certainly bring fear to all those around.

Dr. John Marinelli:

All right. Well, perfect. I think that pretty much wraps up all the questions that I had. Was there anything else that you wanted to add?

Dr. Kathleen Yaremchuk:

Nope. I just want to make sure people understand that the history is very important in terms of for many of these conditions, in terms of whether it's hypersomnia, whether it's parasomnia, to be very specific in terms of frequency, at what time of the night, how the person responds to it and to get a better idea and that some of these things are helpful in terms of having a sleep study but many of these are more clinical and need to have a full history taken to be going down the right pathway to make the diagnosis.

Dr. John Marinelli:

All right. Well Dr. Yaremchuk we really appreciate your time and coming on the podcast.

Dr. Kathleen Yaremchuk:

Thank you for having me.

Dr. John Marinelli:

All right. Now I'll transition to the summary portion of the episode. Today we started off discussing hypersomnia which is most often just simply due to patients not getting enough sleep. We also discussed narcolepsy. It's a syndrome that people have heard a lot about but it's actually not very common. It's associated with decreased hypocretin neuropeptide levels. It's a neuropeptide that promotes wakefulness and a subset of these patients have an interesting phenomenon called cataplexy where they will experience sudden loss of muscle tone and association with a strong emotional trigger. Historically, you may see things about testing CSF for hypocretin levels but really clinically the way this is diagnosed is by attaining a formal sleep study or polysomnogram followed by a multiple sleep latency test in the morning.

And on that multiple sleep latency test, you're looking for two or more naps of the five that are required, two or more naps with sleep-onset REM or SOREMs. Talked a little bit about insomnia. Importantly, know that getting a polysomnogram or sleep study is not indicated and insomnia won't be reimbursable by insurance just because it shows that the patient's not sleeping and you can tease that out by just history. Talked next about restless leg syndrome and recognizing or underscoring that this isn't really a clinical diagnosis. And even though there is overlap with PLMs, periodic limb movements, the diagnosis of restless leg syndrome is really clinical. And about 80% of those with RLS will have periodic limb movements on polysomnogram but most people with periodic limb movements on polysomnogram do not have a restless leg syndrome. So there's overlap for sure, but they are distinct. Of note, restless leg syndrome is associated with an iron deficiency so workup can often include obtaining a ferritin level.

And we transitioned to discussion of parasomnias, which are by definition, they're just undesirable behavioral or verbal events patients experience during sleep or wake transitions to sleep.

They're quite complex and oftentimes patients will present either with their family or their spouse or their bed partner because not only does this affect the patient, but it also significantly affects the family or the bed partner and can be injurious to their bed partner. Overarchingly, there's two primary categories of parasomnias, non-REM associated and REM associated. And just keeping in mind this idea that in non-REM you have been asleep brain but an awake body. And for that reason, patients oftentimes are unable to recall the events that take place within a non-REM associated parasomnia. By contrast, REM associated parasomnias occur in a sleep body i.e the paralysis and then an awake brain.

For that reason, patients are oftentimes more able to vividly recall what was going on. All right, last portion of the podcast here, I'll just ask a couple of questions, pause for a couple seconds and allow you to think about the question and I'll give you the answer. So first question of today, what polysomnogram findings are included in the diagnosis of restless leg syndrome? Trick question, although patients with restless leg syndrome will oftentimes have periodic limb movements, these are not required for diagnosis and many patients with periodic limb movements that you see on a polysomnogram do not have restless leg syndrome. So restless leg syndrome is exclusively a clinical diagnosis. Next question, narcolepsy is associated with which neuropeptide?

Correct answer is narcolepsy has an association with decreased levels of hypocretin. Third question, name a few key distinctions surrounding the episode seen in non-REM and REM associated sleep disorders? A few key distinctive features to just keep in mind is that non-REM associated disorders typically involve confusion upon aroused and amnesia to the event itself. And they often occur earlier in sleep due to the predominance of non-REM sleep in the first half of the night. And overall, they're more common than REM associated disorders where REM associated disorders patients oftentimes are easily arousable, they can recall their dreams and may be more likely to cause injury to themselves far to their bed partner. And last question, REM sleep behavior disorder is a harbinger of what disease?

Correct answer here is Parkinson's disease especially in younger men that are diagnosed with RBD. This can be associated with up to three quarters of patients with the subsequent later on development of Parkinson's. Well, that'll wrap up our episode for today. Thanks so much for listening and we'll catch you next time. (Music).