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ROBERT KANIECKI: Welcome, everyone, to the presentation on migraine. This is a topic that I get lots of questions about and I see, as a clinician doing headache for over 30 years now, cases that I see coming in with labels or diagnoses that I think we can hopefully clarify by the time we're done with the presentation. The title is Uncomplicating Migraine, getting to the item of complicated migraine and other terms that are sometimes used for people who suffer from migraines.

So migraine has various presentations and manifestations. And we're going to talk about really four things, really diving into what's not migraine first out of the gate. Migraine will be the lion's share of what any clinician will see when headache patients present. So if you look at a primary care setting, you look at a emergency department setting, you look at a neurology or headache center group, all of these will primarily be dealing with migraine people.

90% of headache presentations are typically for migraine. So what we need to understand is how can that look? And then what do migraine people-- in addition to their typical migraine presentations, what do they look like? So in order to do that, we need to exclude the people that don't fall into that category, into that 90%. Once we do that, we'll talk about what migraine really is, and then also things that maybe you would think that'd be related to migraine, maybe not. And then, finally, what headaches that we see with migraine people.

So we're going to use the analogy of a spectrum because I will tell patients this every single day, that it's rare that somebody comes in with only one type and level of headache. It's rare that somebody says, I'm coming in with eight headache days a month. All of them are severe. All of them are exactly the same. So usually, people have different levels of headache and different degrees. And even with migraine patients, there are other headaches that we need to understand.

So what's not migraine? First of all, the terminology that hopefully by the end of this presentation, you will no longer use if you're using it now. And the one is chronic daily headache. There really is no such thing. Chronic in the world of headache in our terminology typically refers to people having more headache days than headache-free days, whether that's for 3 months or 30 years. So chronic is not an adjective in a way as much as a definition-- part of a definition at least. So chronic daily headache really just means people-- most people use that term when people have daily headaches for a long period of time, but it's not specific.

That could be a concussion presentation. That could be a migraine presentation. It could be a tension-type headache. In fact, the most common reason for daily to near-daily headache is chronic tension-type headache. So chronic daily headache, not a term that's part of our nomenclature. And this all references the International Classification of Headache Disorders, now in its third edition. So we'll get back to that in a bit.

Next is cluster migraine. I like this term a lot because patients will use this a lot. I don't know if clinicians tell them to say this or they just pick this up. But cluster migraine almost always is a sequence of migraine days or migraine coming grouped. So it's very common for migraine to group. So they'll say, oh, I had two bad weeks and then I had nothing for a week. Certainly, that's true for, let's say, a menstrually associated migraine where somebody-- a woman could have a headache for five, or six, or seven days in a row.

So grouping or a sequence of headache beyond three days. So by definition, migraines 4 to 72 hours. Once you get beyond 72 hours, that's called status migrainosus. It's not cluster migraine. Cluster is a completely different kind of headache than migraine headache. And we'll get to that.

Next is mixed headache disorder. Mixed usually means people think they have a variety of different headaches. And we'll talk about a better term to use there. Complex or complicated migraine, which almost always is somebody who has migraine and neurological or visual symptoms that don't seemingly fit the typical aura of a visual event. And then, finally, ocular migraine. This is probably actually the most common one that I'll get.

An ocular migraine is when patients-- we'll talk about because they've been told sometimes by ophthalmology, sometimes by optometry, sometimes by friend, or maybe even primary care or neurology ocular migraine. Almost always, that's migraine aura without headache. Somebody gets the visual, but doesn't get anything else. All right, secondary headaches. So first, let's be done with the terminology that really is not relevant or doesn't exist any longer.

Now what's not migraine, but we need to be concerned about? These are legitimate causes of headache that perhaps are worrisome. So a non-migraine presentation, a secondary headache, 1% to 3%. Other primary headaches, like cluster or tension-type, 3%, 4%. So not everybody's migraine in a setting that we see clinically. And it's important to see the first line there, the secondary headaches, right out of the gate because if you miss migraine for six months or a year, there's added morbidity, right? Patients will suffer unnecessarily. But there's not mortality.

The first secondary headache line on this, the first bullet point, is one we need to think about right away because any patient who comes in should be considered to have a potential secondary headache by history and examination, if necessary. So if you see things here that don't fit to the usual criteria, consider secondary headaches. But 1% to 3% of what we do. And what we look for, the screening tool-- so the first screen for any headache patient is the secondary headache screen.

So I don't care if they've had headaches for 30 years, they've had migraines or tension headaches for years, and now they're coming in with something a little different. So we have to still pass it through this filter. So any presentation, again, it's going to be the minority, but I got to think about it. Do you have any of these red flags? So the first two, the first, worst, and the abrupt onset, obviously triggers the intracranial hemorrhage alarm bells. Subarachnoid hemorrhage, certainly.

Progression or fundamental change in pattern. That's the sneaky one. So that references those people who say, yeah, I have migraine or tension headaches for years, but this is different. This is new. And that's important to listen to. So patients often have a good insight when they have concerns over something that's out of the norm for what they've experienced. Because, let's face it, migraine people have no lower risk of having a stroke, or a subarachnoid hemorrhage, or a tumor. It's not protective in any way. So we have to be vigilant for them eventually, perhaps at times developing something secondary. So keep an eye on that.

And then other ones that are more or less pretty obvious. So under age 5 or over age 50, those lines in the sand are based on two things. One, primary headaches. Migraine, tension, cluster almost always develop between those two age-- that frame. And then under 5 over 50, the bimodal distribution for brain tumors. So we think that that's a relevant kind of red flag. New headache in high-risk clinical settings. So cancer, immunosuppression, pregnancy, hypercoagulability. So these types of situations. Certainly, trauma you'd be worried about.

Headache that comes with syncope or a seizure. Certainly, we want to think about that headache triggered by Valsalva. Now that's triggered by. It's not worsened by, which is something that's very common to see with migraine, right? We'll reference that shortly as well. But headache triggered by sex, Valsalva, exertion, those are things that could be a secondary headache. Might end up being primary at the end of the discussion. We'll kind of get back to that.

Neurologic symptoms longer than an hour. I'm going to focus on aura, a very benign feature of migraine. Should be typically between five minutes and an hour. If you're shorter than five minutes, you got to rethink it. You're over an hour. Now there are auras that go longer than an hour, but consider other possibilities should that extend beyond that time frame. And then, obviously, an abnormal general exam, abnormal neurological examination are going to be indicators for potential secondary headaches.

So what do we do in those settings, right? We have to think about symptoms that we worry about, and then investigation. There are two scenarios that often pop up when I ask the students, and residents, and fellows to think through red flags. These two pop up all the time. So headache I woke up with. The classic brain tumor headache that's present in the morning and gets better as the day goes on, or gets worse when you're lying down. It turns out that primary headaches do this all the time.

You wake up with a migraine. 50% of migraines start between 4:00 AM and 9:00 AM. So a lot of activity of migraine in the early morning hours. And cluster, for example, frequently awakens people from sleep. So there are secondary headaches, like sleep apnea or dental issues like TMJ, grinding or clenching, or maybe tumor that can do this. But common to see primary headaches. So it's not a true red flag. Noise headache worsened by physical activity, right? When it comes on with, when it's induced by, but not worsened by.

So the imaging, pretty straightforward. If it's acute, CT. If you're in the ED, if you're urgent or emergent headache, then you're getting a CT scan because the CT shows blood, fracture, if you have trauma very, very well. So acute, CT. Subacute, chronic brain MRI. The decision about dye depends on the particular setting, but a non-contrasted study, usually right up front, is where we start. Sed rate or CRP in any individual over age 50. I don't care.

Giant cell arteritis or temporal arteritis is frequently not temporal in location, nor unilateral, nor with jaw claudication, the textbook features that we hear about. You need to be suspicious for anyone. It's such a chameleon in terms of its presentations. Certainly, anybody over age 50 gets new or different headaches, sed rate, CRP out of the gate. Special settings. Vascular imaging, lumbar puncture. But we don't really do EEG unless there is a seizure or a questionable sinkable event, maybe seizure with the headaches. Headache itself no longer-- used to be part of a workup probably a couple decades ago. No longer.

All right, so cluster headache. There is no cluster migraine. There is migraine and there's cluster headache. So cluster headache, if you had a distinguished cluster versus migraine, I mentioned migraine can come grouped. I mentioned migraine can come sequences of days, which cluster can. But cluster, the individual headaches during those sequences of days last 15 minutes to 3 hours. By definition, migraine is going to be four hours plus, unless you're dealing with children.

So 15 minutes to 3 hours. It's shorter. Now it's unilateral. It's periorbital or temporal. It has autonomic features. Those can be seen with migraine. So those don't always help you. A good, solid corner syndrome with the headache and a short duration. And when people say, yeah, I can get three a day or two a day, and one occurs at night and one occurs in the day, often, they're seasonal. Often, they're time-locked. Certain times of day. Again, overnight, really common. More often, men than women. So that's a little difference when it comes to migraine.

But the clinical presentations, a lot of the symptoms can overlap. Migraine can have autonomic features, although they're not typically strictly unilateral. Although in the past two days, I've seen two patients who have come in with pupillary asymmetry associated with migraine developments. So to see a miosis or a mydriasis with a headache, with migraine can happen. So don't get hooked up on that element so much. It's really, what is this like? Is it behaving? So cluster for a few weeks or a few months. It's every day, multiple, or almost every day, or multiple times a day, and then gone for extended periods of time.

So there is something known as chronic cluster where the cycle doesn't quite break. That's pretty uncommon. You have somebody that sounds like cluster. It sounds like it's chronic. It's not breaking at all. That needs to be evaluated probably by a headache specialist. Tension-type headache. So the most common headache in the population is not the most common headache to come to see us because it's a nuisance. On the left, you can see it's not particularly problematic. And I use the term of, often, this is a nothing headache.

It's not unilateral. It's not throbbing. It's not significantly worsened by activity. It's not severe. In fact, never severe. You don't have nausea. You only can have light or noise sensitivity, but you can't have them both. So a lot of nots here. It's like not migraine. That's what it comes down to. So the first filter I mentioned when you-- that you process every clinical content, you get somebody who says, I'm here for headaches. OK, secondary headache screen. How long have you had them? Get a pattern. Get a degree of symptoms. And get an idea, are there any red flags? If so, you go ahead and do the investigation you need to do.

When you realize, OK, it's not a secondary headache, the next filter is migraine because you will only get to tension-type headache when you see it's not migraine. This is the not headache. Not severe, not unilateral, not throbbing, at least in most cases, not with nausea or both light and noise sensitivities. So what is migraine? So migraine without aura. I already mentioned the duration, 4 to 72 hours. It is unilateral, or pulsating, or severe, or worse with physical activity, but you only need two of the four. You don't need them all.

So if you don't pass through this filter, you can say, OK, it's bilateral. That sounds like a tension headache. Well, not really if it's going to be bad and it has-- it's throbbing and it's associated with nausea. You're already end up in the migraine. So your first filter, secondary headache screen. Second filter is this migraine, OK? So migraine is what you're going to see most of the time. This is the features that are listed on here. You have all the diagnostic criteria for migraine without aura.

There is the reference there from Cephalalgia. So the International Classification of Headache Disorders, Third Edition. First edition was 1988. And so we've had this system for years. This is the third revision. So migraine with aura. This is a little bit more to digest. And what I want to do with this is actually look at the symptoms because this is where we run into the term ocular migraine, or complicated or complex migraine. It's going to fall into this sheet of words where these symptoms or signs might be confusing to some.

So this is the new criteria. You need at least two attacks of aura. You need five headaches, but two-- at some time or another, you need to have at least two auras. We'll talk about the symptoms, B, in a minute, but I want to focus on C right now. So there is a gradual spread. So this is not a switch. This is not amaurosis, shade down, shade up. This is not I went numb quickly on my right side. This is kind of a gradual phase. It's a wave. I'm going to show you in a minute here kind of illustrating that.

We try to differentiate some of these symptoms from vascular events and from, let's say, demyelinating events. Demyelinating symptoms typically last days, weeks, months, right? The vascular symptoms sometimes come on very quickly, a matter of seconds or minutes. This is going to be somewhere between 5 and 60 minutes. So spreading gradually over 5 to 60 minutes. So the numbness of an aura is not my right side went numb. It's started in my fingertips and then my lips. And then it went up my hand, and then went down my face into my throat and tongue. So this is a spread, OK?

And there are both positive and negative phenomenon. So most vascular events are primarily negative, right? You get numbness without a lot of tingling. You get loss of vision without a lot of visual change. If you start getting lots of lights, and lines, and things like that, you got to think of a retinal detachment more than a vascular event in the retina. So the aura itself. So what we see here is a wave. So the reason it's not a switch is because physiologically, it's not a switch. This is a wave. Whoops, let me go back.

This is a wave of cortical spreading depression. So this goes gradually across the nervous system, and it moves from the visual cortex in some people to the sensory cortex right there, and then to the language cortex. So this can migrate. This moves like a wave. And that's important because the clinical manifestations match this kind of slowly propagating wave that goes around two to five millimeters a minute across the brain. So this is a self-propagating wave. It's not one vessel constricting.

In fact, if you have visual, sensory, and then language phenomenon, you're going across posterior cerebral artery and then middle cerebral artery territories. Vertebral and carotid. So completely impossible to really create unless you have this weird vasculature to make these types of attacks vascular in any way. So two to five millimeters per minute. You'll see that that's the way it spreads. And so there's activation. On the edge of that wave is positive phenomenon. And the back end of that is the negative piece.

So what we have are positive symptoms. That's flashing followed by an area of vision. So people will say it's like an after flash, like a flash bulb went off. It's bright white, and then it's just kind of blurry and I can't see through it. Or it's, yeah, jagged edges, and they kind of migrate. And it gets bigger and bigger and bigger, and then it moves off into the periphery like a drifting crescent of colors. So there are positive and negative phenomenon. Tingling as well as numbness part of this scenario.

So now the symptoms. So if you understand the process, one of the ways to distinguish, again, a vascular or demyelinating event is based on time. One of the ways is the sequence of events of how the event rolls out. Let's talk about the symptoms, though. There are six aura symptoms that are listed. We're going to talk about something else, vestibular migraine, shortly, which is not on the official list. So this is the officially recognized aura list. Visual, sensory, language, motor, brain stem, and retina. So let's start with the first three.

These are typical aura. So this is where I see complex or complicated migraine most commonly applied if somebody has sensory or language aura. And I think it's better to-- the criteria, it's speech or language. But it's really language because it's the communication center. So as that aura moves from the occipital cortex towards the parietal and temporal cortices, it's affecting the vision center and then the sensory center, hemisensory center, and then the communication center. So it's texting. It's writing. It's typing. It's emailing. It's not just speaking. So it's more the language center that gets knocked out for a while. Like any other storm, it's knocking power out to different parts of your brain temporarily.

So any combination of visual, sensory, and language, any of those three or all three, sometimes in sequence, are considered to be typical aura where they don't necessarily warrant specific imaging or specific treatment. So no worries with this particular group. That's been much better defined over the past with this reiteration of the criteria. Motor phenomenon. That's hemiplegic migraine. So any weakness, any motor component. Now I'm not going to say a little eyelid droop or a little facial droop. I'm not talking about that. This has got to be noticeable.

Hemiplegic migraine is not subtle. It's weakness. Now many people who report weakness have a sensory feedback issue. If you're numb, you feel like your hand is weak, right? If it's numb, you're not able to grip things correctly, for example. We're not talking about that. We're talking about true weakness, paralysis, difficulty with movement, not sensory weakness. So when people say they're weak on one side, often, I ask first, are you numb or tingly there? And most often, that's the case.

The other time that we see this frequently is migraine that has a functional weakness, not particularly organic in any way. So the functional weakness that can come with migraines and the experience, the migraine experience, which can be stressful, can sometimes come with a functional weakness. I've done headaches for well over 30 years, and I've seen maybe a dozen, at most, hemiplegic migraine patients. Half of these are familial. They have a nice family history of same type of headache. The other half are sporadic. And there are specific genetic subtypes. You truly have a hemiplegic migraine or you need to evaluate that somebody probably should see a headache specialist because they're few and far between.

Not as uncommon are migraine with brain-stem aura patients. And the brain-stem aura symptoms are very interesting. They are, as you would imagine, typical brain-stem symptoms. We used to call these basilar migraine because there was a thought that there was basilar artery or vertebral basilar spasm as part of these, but not necessarily. There's no evidence that that occurs. Migraine with brain-stem aura probably-- it's best to just put the list of the symptoms up so you can see. Slurred speech. Again, this is not communication. This is not aphasia. This is dysarthria.

You get vertigo. Not just lightheadedness, dizziness, but vertigo. Tinnitus, hypacusis, diplopia. That's a really solid one. Ataxia, not attributed to the sensory deficit. So just as your weakness could have been sensory, you can have a sensory ataxia because you can't kind of feel where your legs are going. And then decreased level of consciousness or alterations in consciousness. This is more common in young people.

Toddlers, children, young teenagers, particularly younger women. That's the younger people that get the *Alice in Wonderland* phenomenon. You probably heard of that before. That fits into this group where there's an alteration in sensory experiences. So almost like somewhat of an out-of-body. Not particularly common once we get out of the teens, but they still can occur. And you can get these other symptoms as well. In years past, the hemiplegics and the brain-stem aura patients were set aside because it was felt that triptans were contraindicated.

In fact, the original package labeling for triptans includes these in the contraindicated list. But honestly, there's no evidence that that is a problem. The basilar and brain stem aura patients, all of you I have treated with triptans for years before we even recognized what kind of migraines they had. The hemiplegic, again, rare as can be. So get them evaluated before you even think about probably triptan management or managing them in any specific way.

And then we got retinal migraine. So I don't know if ocular migraine really comes in that often as this. It really doesn't. As I mentioned earlier, that's the person who gets a visual aura without a headache. Ocular migraine. Retinal is different, OK? So retinal needs to be specifically addressed as well. Like hemiplegic, this is rare. And like hemiplegic, I would suggest an evaluation. So here is how it's defined. These are fully reversible monocular symptoms. So that's the key. And now you have it in red, highlighted.

How do you document it's monocular? Because people will say, I get right-sided visual problems. They may think it's their right eye if it's far in the periphery, but far peripheral auras are 95% of the time, much more than that, are actually hemispheric, not retinal. They're just due to being on the edge of the hemisphere. So they are typically binocular, but patients don't recognize the nasal field if it's particularly peripheral on the one side.

So either you can document it's one eye by a clinical visual field examination, or you document clearly from the patient. Yes, they close one eye. It's there. They can't see. They close the other eye, they're fine. So one eye has got to be normal. One eye has got to be impaired. And it's got to be most of the eye, if not the entire visual field. It's like the whole eye is going out. Again, rare. Could be vascular. This could be a giant cell arteritis presentation, for example. This could be an ischemic optic neuropathy. It could be a retinal detachment. So you get something that's kind of monocular. Be very cautious about labeling it as retinal migraine.

Vestibular migraine I put on here. I didn't list this in the criteria because it's not a formally recognized diagnosis. In our classification publication, it's listed in the appendix, kind of a working diagnosis. But this is how it's defined. You have to have migraine. Basically, a history of migraine with or without aura, OK? And you also have the stipular symptoms that are bad, moderate to severe, and last five minutes, kind of the short end of an aura, to 72 hours, the long end of a headache.

So it behaves like migraine in a way, duration of either aura or headache attack, from a time definition. And then at least half the episodes come with other migraine features. As you can see there listed, either your pain features, photo and phonophobia, visual aura. So some of these other things. Nausea is not listed because a lot of people get dizzy, get nausea anyway. So that's why you don't see that one on the list. But basically, you have migraines, you have dizzy spells lasting five minutes to three days.

At least half of the dizzy spells are connected to something that looks like a migraine, either based on the pain features or the photo and phonophobia or aura. And there's no other better explanation. This was just the topic of discussion at our scientific headache meetings just in June of 2024, just earlier this month. So this is still in evolution. Now you have your lumpers and your splitters. I happen to be a splitter. I like to hold to this label. In order to give somebody a diagnosis of vestibular migraine, I want to see this set of criteria met.

And it's not that often. You have a lot of people that have migraine, have dizziness. They have motion sensitivity as a youth. They're just dizzy people often. But it doesn't necessarily mean they have vestibular migraine. So I think that these patients do warrant neurovestibular evaluation if the dizziness is moderate to severe as listed in here. And there's overlaps.

BPPV can present with headache as a symptom. You can see PPPD, so Persistent Postural Perception Dizziness. You can have dizziness as a part of Méniere's. And headache can be part of these other symptom complexes that vertigo is part of the-- and it's often the main symptom.

So think of a headache can be a complication of some of these dizzy disorders. Or dizziness can be related to migraine-- vestibular migraine. Or maybe there's just a couple things that are going on. Practically, I don't know if it makes much difference if there is a vestibular element. These people do seem to do a little bit better with benzodiazepines. Clonazepam tends to be the typical one used. But we kind of rely on the vestibular people to do that for us. And they're the ones that we'll prescribe vestibular therapy or particular vestibular treatments.

We just go after it from the migraine side. So whether they have vestibular migraine or migraine with just dizzy stuff, we'll end up trying to manage the migraines as aggressively as possible. Chronic migraine is not chronic daily headache. But chronic migraine has a definition, meaning you have at least 15 headache days a month. At least eight of those have to meet full criteria for migraine or respond to migraine medication. This is required, for example, to get approval for botulinum toxin. You have to have a diagnosis of chronic migraine. So at least 15 days a month of total headache. At least eight days a month are moderate to severe and meet all the migraine criteria, or they respond to migraine medication.

All right, so we got what is not migraine. We went through what is migraine. Now let's talk about what is also migraine. So what I mean by that is these are things that we see in migraine people that are part of the migraine story and relevant to the conversations we have with our patients. So if a patient with migraine gets imaged, this is not an unusual finding. This scan shows these bilateral, punctate white matter hyperintensities that tend to be periventricular or subcortical. And the B can be posterior fossa or anterior fossa.

We can see them in the cerebellum. We can see them in the frontal lobe areas. Here, you see mainly in the frontal lobes. So these spots are completely benign. We see them all the time. They appear to be a result of having migraines rather than a cause of. A number of studies have investigated long-term what happens with these folks that get these. So there's one called the camera study out of the Netherlands, which is really very well done, looking at a decade span of time of, OK, you got-- you have migraine, you have a scan, you have some white spots.

We look at you 10 years later. You have another exam, another scan, another neuropsychometric battery of tests. Doesn't appear to impact neurological function and their cognitive abilities. We see them. I use the phrase migraine spots to people. That's why I have them up here. But the radiologist will read these as small white matter hyperintensities in the periventricular or subcortical regions compatible with microvascular ischemic change, demyelinating change, Lyme disease. And often, they'll add migraine to the differential.

Since we're dealing with a lot of younger women, right? The demographic of migraine is very heavily stacked towards females and more heavily stacked towards youth. And we're seeing women who would be concerned about demyelinating disease. So it's important to get to the report and get to them before they get the report about lesions and get the report about these other things that they read the differential diagnosis and they're certainly quite concerned. So you see these. They don't necessarily require any follow-up.

We don't have any evidence these are vascular. Occasionally, vasculitis gets added to the list, which is always fun to address as well. But very, very common to see. And the phrase I give to our residents, our fellows, our students, treat the patient, not the scan. A scan of somebody having strokes is a scan that could be a scan with long-standing demyelinating disease might something look if it's minor demyelinating. Could look potentially like this. You're not really treating-- you're treating the condition, right? And so just be aware of the fact we got a lot of people who get migraine spots.

Status migrainosus, the cluster migraine, perhaps, of old. So status migrainosus means it went beyond the typical 72 hours. I think most people are familiar with it, so I'm not going to dwell on the label. But what do we do? If they show up in the ED, typically, the treatments, the recommended agents from a paper about 10 years ago now, prochlorperazine, metoclopramide, sumatriptan, ketorolac. You can see all those have data in the acute migraine management for status.

What we usually have for acute setting is the commonly known migraine cocktail. So that's a liter of fluids plus a combination of ketorolac, diphenhydramine, and either prochlorperazine or metoclopramide. The second line agents, should they fail that, is another liter of normal saline and often valproate, sodium valproate IV, and a push over five minutes. These are the two standards. Sometimes, corticosteroids are added in the ED. The data is not-- they're somewhat conflicting, but it appears to improve the long-term results of the ED treatment. Doesn't improve the short-term outcome of whether you get pain relief or pain-free, but it does reduce the rate of recurrence of that particular severe headache.

So we do use steroids a lot. And we use them maybe not in the emergency department setting, but by phone. Somebody calls me. This is our most common phone call. And I'll get ten-- at least ten, maybe 20 a day of I'm on my fourth day of headache. I'm on my seventh day of headache. I was away, and I get-- headache started two weeks ago and I can't break it. And then one of the reflex actions is they'll say, my medicine's not working. So what usually happens is the acute medicine gets changed. OK, we went from rizatriptan to sumatriptan because the rizatriptan's not working.

Well, they just get stuck. And no medicine works 100% of the time. The success rates of acute therapies at best run about 90%. So people are going to have this. It's going to happen. If they have a backup plan already, great. They take care of that at home. If they don't have a backup plan, they call you. And so this is what we do. So this is usually when people have failed their first line and their backup, and they're stuck in a cycle. So we'll do a steroid. There's three different examples for you there. Other options are long-acting nonsteroidals. Sulindac could be be an example. Meloxicam. You can use atypical antipsychotics like olanzapine or risperidone.

Methylergonovine and ergot-type medication, been around for years, but really hard to get covered by insurance. So typically, we don't use this very much any longer. More or less the thing of the past, but we still occasionally go to it. And then finally, pericranial nerve blocks. Nerve blocks not only of the occipital nerves, but the supraorbital, supratrochlear, zygomaticotemporal, auriculotemporal. We do a crown of injections to try to break a cycle. And that can be very helpful as well. So obviously, people need to come in for that. The other options medically can be phoned in to the pharmacy.

All right, so now with migraine, what else do we see? So we have two sets of headaches. I'm going to do the first one fairly quickly. So two sets. This is the minor headache. So migraine people get their migraines, but they get other headaches. So this is the other headache section. The other headache, mild, are headaches that look like sinus or tension-type headache. And this happens. Migraine people should have this. Not every migraine comes in with every headache being severe and always the same, as I mentioned earlier in the talk.

There's a spectrum of migraine. And I tell people, you come in with a different basket of headaches. It's not one type. You have maybe several. Don't ask how many headache types do you have. That's basically a death knell for your visit. You just have wasted your next 15 minutes hearing of the assortment. Just basically, do you get bad headaches? Let's talk about those and let's make sure they're migraine. Now how many total headache days did you say you had a month? You have 20? And you said 12 were bad? Well, what about the other eight? Scale of 1 to 10. What are we talking about?

Oh, yeah, they're level four and they're here, and there's no other symptom. OK, maybe it looks like a sinus or a tension headache, commonly described. So be aware, these patients are going to have minor headaches. Have them think, consider all of them as being migraine. They don't have to manage them all the same way. But you need to know if they're having minor headaches, too, because you need to know what they're medicating. So the key numbers are, how many headache days out of 30 do you have? Out of 30 days, how many are headache days?

How many of those are bad? And let's hear about those in detail. And then how many days are you medicating? Because they'll have minor headaches that they're taking-- a woman just this morning, she was treating a minor nocturnal headache every night with acetaminophen and diphenhydramine, Tylenol PM. So it's part of a medication overuse scenario because she ended up having 30 headache days a month. 20 were severe. And so the medication treatment needs to be assessed based on both their bad and their minor ones.

So the beginning of a migraine, let's put it here. The mild phase of pain is really early headache doesn't have all the migraine features. It's not throbbing yet. It's not severe yet. It may not be localized yet. It may not be photophobia and nausea yet. You have that moderate headache. So some of the migraine attacks end at aura. They get no headache. Some of the migraine attacks end at mild pain. It never gets to the full fruition of migraine. That's the way to understand this process. So now the bad ones that patients get.

Now this is one that's really common and very relevant clinically, and that's primary stabbing headache, what we used to call the ice pick headaches. These primary headaches can be seen in isolation, outside the context of migraine. These are independent headache disorders, but they seem to be more common in migraine people. This is the first, primary stabbing headache. I had migraines for 17 years. I had these for about 10 years of that history. Once the migraines went away, these went away, too. In many migraineurs, these seem to run not parallel in terms of frequency, but they run in the same circles.

So you'll see these headaches. They're sharp and sudden. They'll tell you it's a wincing pain. It's really intense. It stops them in their tracks, and then it's gone. Mine used to occur right here, right superorbitally. And then if they're in the eye itself, we used to call these the needle in the eye attacks. So they're really brief, really sharp, intense, and then it's over with. Mine were more like a knitting needle when it went there. When it's further back, and most are extratrigeminal, it tends to be broader in diameter, so more like an ice pick.

So these are a few seconds, may last a minute. They're very erratic. Maybe one day you have 20 of them, and you don't have any for months or years. So this isn't cluster. Cluster is 15 minutes to 3 hours. These are seconds. These are short. And again, a lot of them can be extratrigeminal. 2/3 also vary in location. So I think patients are more comfortable, and certainly clinicians are. Sometimes, they're here. Sometimes, they're here. Then you think, OK, well, I don't have to worry about something just being there. And it's more common in those with migraine.

Reassurance and indomethacin if necessary. So if you run into a cycle where they're having multiple attacks in a day, a day or two of indomethacin might not be a bad idea. But most of the time, you just reassure them, say this is a thing that comes and goes. Primary thunderclap headache needs more reassurance because this is longer. This is an explosive-- basically, this is a subarachnoid hemorrhage-type headache that comes without a hemorrhage. So same headache. Explosive onset. So what we call thunderclap onset, meaning peaks within one minute. So it comes on suddenly. Bang. And this is very intense.

And it's not triggered. That's why it's called primary thunderclap. It's just a random spontaneous headache. When you see multiple of them, you realize there isn't an aneurysm when they've had 20 or 30 of these over time. But they're really troublesome because they're tough. They last for at least five minutes and often linger for hours. So come on suddenly, real intense for five minutes, 10 minutes, 15 minutes, maybe an hour or two, and then linger kind of like a migraine. They'll develop some migraine features.

So these can be seen. So when it's no migraine patient and they just have this, they have a workup, it's negative, you call them primary thunderclap headache. When it coexists with migraine, I give them both diagnoses. So we code for migraine with or without aura, and then primary thunderclap headache. In a similar fashion, those are spontaneous headaches that are explosive, we can have exercise headaches that are explosive. And these aren't always thunderclap. These can look like a regular migraine, but they're only coming with exercise.

So if you have these headaches with exercise alone, again, you don't have migraines, you're called primary exercise headache. If you have migraine, you get both labels. So these are headaches that come on with exercise. They last shorter than two days. And more common among migraine people. They're also more common among men. Indomethacin or propranolol. It depends on how often they exercise and what the exercise regimen looks like about how often you're going to treat. So if somebody is very active, if they target a heart rate, that's a challenge because propranolol will affect that, right? It will impact that, maybe even exercise tolerance. Indomethacin is good pre-exercise treatment, if necessary.

Then there's primary headache with sexual activity. So it can be more like a exercise headache, which looks like migraine. Or it looks like a tension headache, but coming on the excitement phase. Or it can look like a thunderclap attack when it comes on at the time of orgasm or climax, like a really bang. They impact the activity involved, as do the exercise headaches as well. It's hard to continue the exercise. It's hard to continue with sexual activity if your headache is blowing off during the course of this process.

So it's important to patients to understand this. Like the exercise headache, this needs to be worked up for potential vascular issues early on in the evaluation. But once you confirm that there's nothing else secondary happening, mainly vascular issues, then you can move forward with managing this. So two subtypes we use to separate them out. And now they're just kind of listed a little bit differently in the C bullet point, where you have one, the kind of tension or migraine that increases during excitement, or two, this thunderclap attack that occurs abruptly at the time of climax.

Most of these are back of the head, interestingly. When somebody presents for the first or second time with these types of episodes, you get the back of the head, the neck involved. And you're wondering, did they do something in a vertebral basilar? Is there a dissection from trauma? Is there a neck strain? Is there a cervical disk? Like the exercise headache, the male's more likely than females. And the attack frequency is directly tied to the frequency of sexual activity, as you can imagine.

But the more active people are, it seems the percentage of times with the activity that the headache occurs. It may not be 100. It may be 80% of the time. But the more active they are, the more likely it is to be tied. So you're looking at managing this the same way as exercise-induced headaches. That is indomethacin or propranolol with the same caveats. Indomethacin would be done prior to the activity as pre-treatment, whereas propranolol or beta blockers would be more of an ongoing basis if people are very active or don't want to treat on an as-needed basis. Or you have to keep in mind they couldn't tolerate or can't take indomethacin, or vice versa. Beta blockers impact the performance of-- just like with exercise, the performance of sexual activity, and you would have to change strategies a bit.

So that's the end of the conversation about migraine variations and manifestations. So what I wanted to do is, again, uncomplicate migraine, different pictures that we see. First, make sure it's not migraine when you're getting out of the gate. I started off with the terms we don't use. And hopefully, again, most of those are in your rearview mirror anyway, even before this. But be more specific when it comes to the nomenclature. And be aware of secondary headaches, obviously. Any headache scenario always revolves around, do I need to worry about something secondary?

So the thunderclap headache, for example, back to that. Subarachnoid hemorrhage. Vascular dissection. However, recurrent thunderclap headaches don't lose sight of the fact of other things as well because they can be maybe not just primary thunderclap, but the most common cause for recurrent thunderclap being RCVS, or Reversible Cerebral Vasoconstriction Syndrome. Don't have much time to get into that, but RCVS has a number of causes that are commonly faced. And that can include immunosuppressive agents, serotonergic agents, sympathomimetic agents, or cannabinoids. So if you're not familiar with RCVS, get familiar with that and the thunderclap headaches, a specific subtopic that we can address down the line.

Then we talked about what is migraine and the different criteria we use for migraine with aura, migraine without aura, the different auras. Typical being visual, sensory, language or communication, any combination of the three. And then we have brain-stem aura, hemiplegic migraine, and retinal migraine. So the different auras, and also the fact that migraine people also get other headaches that are part of their migraine story. That's the low-level tension-type or sinus appearing headache can also get migraine spots on their MRIs at times that also are benign. So also part of migraine stories.

And then, finally, headaches that we see more commonly with migraine. They're not migraines. So primary thunderclap headache, primary stabbing headache, primary headache with sexual activity aren't necessarily migraine variations, but headache episodes or subtypes that are seen more commonly in the migraine population. So hopefully, this clarified some of these confusing matters when it comes to migraine. We did talk a little bit about management, mainly with status migrainosus, but this was meant more to focus on true, accurate labeling and diagnosis. So thank you all for your attention. I hope you found it helpful. And go ahead and have a great rest of your day.