

Dr. Jason Barnes:

Hey there. Welcome to another episode of ENT in a Nutshell. My name's Jason Barnes and today we're joined by neurotologist Dr. Dan Coelho, and we will be discussing sudden hearing loss. Dr. Coelho, thanks for being here.

Dr. Dan Coelho:

Thanks for having me, Jason. Good to be here.

Dr. Jason Barnes:

So when we talk about sudden hearing loss, when someone presents to your clinic, what are they typically complaining of and how do you evaluate them?

Dr. Dan Coelho:

Sure. So patients will, of course come to you complaining of hearing loss. It's right there in the title. The issue is how do you define sudden? And there are a lot of different ways to define sudden hearing loss. And the traditional kind of answer is over the course of three days or 72 hours, but it can happen much shorter there. Where this gets real tricky is that oftentimes patients don't present to you as an ENT doctor or really, even to their primary care doctor or to anybody within that first kind of three days of it happening. They think, Oh, maybe I've got a cold, maybe it's allergies. Maybe I've got some wax in my ear. Maybe it's something, I'll just let it pass. So it can be real tricky for us as otolaryngologists to see these patients very quickly after. And it's important to see them soon after because their treatment is and their outcomes and prognosis is better by seeing them sooner.

Traditional definition, really again, as I said, is about 72 hours, but patients don't always present straightforward with just a can hear and then all of a sudden boom, out of the blue, they can't hear. Sometimes it can kind of be an in and out that can happen. Sometimes they get a little bit of associated tinnitus or some fullness, maybe even some dizziness. It can almost be a prodrome for some patients, but generally I consider it within a few days.

Dr. Jason Barnes:

And when you evaluate these patients, what questions are you asking them apart from hearing loss to determine what's going on?

Dr. Dan Coelho:

So a lot of the same questions you'd ask anybody for just a general hearing related question. What's your history of noise exposure. What's your history of recent illness, recent travel? What's your past otologic and hearing history? Of course, knowing their overall medical conditions and comorbidities as well as medications is important, including over the counter medications. Basically just a thorough history and physical that you would do for, for anyone.

A lot of times people have a preceding upper respiratory infection, but frequently they don't. Sometimes it's just their immune system is down. Sometimes it's even a GI related problem that they might have. I'd say in my experience frequently, it's just out of the blue, truly out of the blue, but there are occasional cases where you can drill down a little bit and you'll find out that, oh maybe they had just taken, let's say a PDE, like Viagra or Cialis or something like that. That's been associated with sudden hearing loss.

Dr. Jason Barnes:

Yeah. What are some other risk factors or are there any that we can really pin down to this?

Dr. Dan Coelho:

Yeah, mentally I kind of break it down into older patients and younger patients. The differential for sudden hearing loss is wide. So we're just talking about sudden hearing loss right now. We don't know that it's idiopathic sudden sensorineural hearing loss, which is a diagnosis of exclusion. But you're working diagnosis in your head has to entertain the fact that patients can have lots of different things going on.

So there are people who will have sudden hearing loss that can be a hydrops picture or an autoimmune picture, or even retro cochlear pathology or intra cochlear pathology. So you don't necessarily know. But for the patients, once you have the hindsight of knowing, you've got patients that have this, what we call idiopathic sudden sensorineural hearing loss, I mentally kind of break them up into two different groups, younger patients and older patients. And older patients tend to have higher risk factors for other comorbidities of microvascular disease, diabetes, atherosclerotic carotid artery disease, or coronary artery disease. These are the things that kind of raise your suspicion that this might be a thromboembolic event versus a younger patients, especially those that might have had a preceding upper respiratory or some sort of preceding illness, that it may be virally mediated.

The fact is that we don't really know. We don't know for sure. In an individual person, it's very hard to get patients to donate their temporal bones while they're alive.

Dr. Jason Barnes:

And as we kind of keep weaving through this, I do want to bring up that there are really great clinical practice guidelines that were published in 2019. This was an update to previous guidelines. So some of the questions I ask will also be kind of coming from this. And that informs my next question, which is what do you do on physical exam when you see these patients?

Dr. Dan Coelho:

Again, same thing you'd want to do with any patient is a thorough head and neck exam focused on the ear. There are viral conditions of herpes zoster oticus, Ramsay Hunt Syndrome. You want to take a look at the cranial nerves. You want to look for vesicles inside the ear. You want to rule out any other causes of sudden hearing loss. I mean, certainly you can have a wax impaction. I mean, anywhere from the external middle or inner ear can be a source of sudden hearing loss. It could be a sudden impaction of wax. It can be new onset of a middle ear fusion. If the history is there, a patient can give you a history, can be a perforated eardrum, could be associated with pain. All the things that should be fairly obvious.

The group of patients that we kind of lump into the sudden hearing loss, or certainly the idiopathic sudden sensorineural hearing loss, generally have completely normal physical exam with the possible exception of tuning forks. But even the tuning forks may not be helpful. Of course, if it's more of a slow tie frequency, unilateral asymmetric loss. So if you're testing using your 512 tuning fork, you may not necessarily have a Weber that lateralizes to the side of the sensorineural hearing loss if the loss isn't at add 512 Hertz

Dr. Jason Barnes:

And moving on, what is the pathophysiology of sudden hearing loss? And how do we break this down between conductive and then sensory, which we're going to be moving more towards the idiopathic side of things.

Dr. Dan Coelho:

Sure. So as I mentioned, there's a wide differential for sudden hearing loss and it all depends on where the problem is. I kind of mentally think about it anatomically, external ear, middle ear and inner ear. And there's all different ways to evaluate that. Your differential, as I mentioned, is pretty wide and hopefully it's pretty easy to diagnose a wax impaction, but never assume that's the problem. You'd have to take the wax out and then ask the patient, do you feel like your hearing's been here? If the answer is no, then you've got to dig a little deeper, figuratively speaking not literally. But the differential is very wide. So that's your job, is to figure out what's going on. Never assume that it's idiopathic sudden sensorineural hearing loss.

So the pathophysiology of those, of course, are different probably beyond the scope of what you want to talk about today. But the pathophysiology of idiopathic sudden sensorineural hearing loss, which is really something that you kind of only figure out later and you can maybe assume that that's what it is, but you have to do your due diligence, and the pathophysiology is still something that's under debate. Again, we're talking just about idiopathic sudden sensorineural hearing loss. That could be, I think the leading candidates are generally microvascular or cessation of blood flow and oxygenation to the inner ear versus a viral issue, which probably ends up having the same pathway, which is decreased oxygenation to pretty metabolically fragile structures inside the inner ear that ultimately can only sustain so much of a hit.

Dr. Jason Barnes:

And one of the questions I like to ask is what happens if we see this pathology and just do nothing about it?

Dr. Dan Coelho:

Sure. So that's a great question. And again, it's variable depending on what the underlying cause is. I hate the word idiopathic sudden sensorineural hearing loss, but it's pretty accurate in that again, it shows that we don't know what we're talking about. We do have some data about the natural course of this and perhaps not surprisingly a fair number of patients will actually get better even if you do nothing. So the natural course of idiopathic sudden sensorineural hearing loss, again, this is population-based studies rather than an individual patient, but generally the factors that'll affect spontaneous recovery have to do with age of the patient, severity of the loss and whether or not there was dizziness or vertigo associated with it at the time of the loss. Those are more prognostic factors. But yeah, so patients will get better. There are treatments though that will do better than nothing, but even that is up for debate. It's pretty well established now that steroids in whatever form, I'm sure we'll get into that later, but steroids can be helpful.

Dr. Jason Barnes:

Sure. And just to formally address it, I know you've spoken about it several times, but what is the differential diagnosis when someone walks in to your clinic and you suspect idiopathic sudden sensorineural hearing loss?

Dr. Dan Coelho:

Well, I think your differential gets smaller as you go through your history and then it gets even smaller as you go through your physical and it gets even smaller as you go through your workup. Certainly if you've got a completely normal exam other than a unilateral hearing loss, and you have an audiogram that shows sensorineural hearing loss, that's still not necessarily idiopathic sudden sensorineural hearing loss. There are things like hydrops or auto-immune inner ear disease, or I mean certainly it parses out from history if there's trauma or acoustic trauma or anything like that. You'd even need to get some imaging to rule out retrocochlear pathology. Acoustic tumors can present with sudden hearing loss as well. It's rare, but they can. So the list of potential causes for sudden hearing loss is great, but it can be pretty quickly winnowed down just in the clinic before the patient even leaves. And certainly the audiogram is really key. Can't have anybody leave your office without an audiogram.

Dr. Jason Barnes:

Right. So that goes to my next question is how do you work these folks up when you suspect idiopathic sudden sensorineural hearing loss?

Dr. Dan Coelho:

So I have the luxury of having kind of on the fly audiologists and hearing tests immediately at the point of care when I see the patient, and if I don't, I have a good enough relationship with our audiologists that I can just call and say, hey can you see this guy immediately. And yeah, so audiogram is critical. I'm not so sure that additional factors are helpful other than to rule out malingering. A good audiologist will be able to do that if their speech reception doesn't match up with your pure tone averages. And certainly if you suspect malingering, which should still also be on your differential, I probably should've mentioned that as well. And that includes not even conscious malingering, that could be conversion disorder as well. Things like OAEs and reflexes can be helpful to rule that out. You have to have a wide differential in your head before you can start to bring it down.

Dr. Jason Barnes:

And when you get your audiogram, what are you looking for to find the "official diagnosis" of sudden hearing loss?

Dr. Dan Coelho:

I kind of think about it the same way that I think about asymmetric hearing loss in many respects. Traditionally the definition of asymmetric hearing loss is 30 decibels or more, or I think it's 10 or 15 in three consecutive frequencies, but it really is a gestalt. As a clinician, as a practitioner, you got to take all the information. If the patient has a prior audiogram, certainly you can compare it to the prior audiogram. If the story adds up and there's a sudden drop and it's sensorineural, then I'd be even willing to treat a significant drop in one frequency or even a mild drop across a 10 or 15 drop across multiple frequencies, or even less if the story's there. For most patients, they're not going to have a prior audiogram though. And for them, I'll just use the contralateral ear as what I assume is their baseline. Assuming you asked the patient were both ears equal prior to this.

Dr. Jason Barnes:

And just to kind of explore this a little differently, what happens if they have bilateral sudden sensory hearing loss?

Dr. Dan Coelho:

Yeah. That can happen. That can happen. And it's a real tricky part, can be tricky to manage, but in many respects is managed the same way. Your differential increases a little bit. There are some certainly more central causes. You start thinking about both infectious viral as well as microvascular conditions that can affect the brainstem. Auto-immune for sure can do that as well.

One thing Jason, I forgot to mention is in part of the history. I know we're jumping around a little bit here, but tinnitus, even unilateral tinnitus can sometimes be an indication. Sometimes people will, when I mentioned earlier that patients will present clearly with hearing loss, sometimes that's not the case. Sometimes depending on what frequency is lost or how much hearing they've lost. Sometimes patients don't complain of hearing loss, they complain of purely just tinnitus, which is really probably just from the... It's complicated and again, probably way beyond the scope of this talk, but the auditory deprivation that comes from that, for some patients, if it's certainly not in the frequencies that are involved with speech or depending on what their listening conditions are on a day to day basis, they may present with tinnitus as well, so.

Dr. Jason Barnes:

And what's the role of imaging in these folks?

Dr. Dan Coelho:

So, my philosophy is that all these patients should be imaged irrespective of assuming they have a sensorineural hearing loss, not conductive hearing loss, but a sensorineural hearing loss. And even if it's not sudden, I almost go by the same criteria as if they had an asymmetric hearing loss, and for that, that's an MRI, a contrast in MRI. Right now that's the gold standard for rule-out. If you're limited and you have ABRs, that's helpful, but the sensitivity and specificity, although good, are still not great, especially as you get some smaller tumors. So I'm a big believer in MRI. And I think that everybody should get it.

I also would caution you to say that even if it either spontaneously improves, that is the hearing or whatever the symptoms they have, or with steroids, I still encourage people to get further radiographic MRI workup to rule out an underlying pathophysiology. Just because some things may be responsive to steroids or even improve spontaneously, does not necessarily mean that they don't have anything. And I think as otolaryngologist, it's our job to do that, because if we don't nobody will.

Dr. Jason Barnes:

And is there role for CT scans?

Dr. Dan Coelho:

No, not in my mind. Not for sensorineural hearing loss. With the exception of somebody who says it happened immediately after a trauma and it's more of a mixed hearing loss or there's a conductive component or it's a sensorineural component, but they have a history, a distant history, as oh, this happened before. When I was four years old, I fell off the jungle gym and hit my head and I lost my hearing on one side. So what I'm getting at is inner ear malformations, but those can be pretty easily picked up on a MRI, especially a high resolution T2 weighted sequence.

Dr. Jason Barnes:

And what's the role of lab workup here?

Dr. Dan Coelho:

Yeah, I generally don't get lab work. Historically there's been all sorts of attempts to kind of basically go fishing for conditions that have led down certain paths that may have not been fruitful. Usually not, but generally it's considered not very effective, certainly not cost effective. I think it's different if it's a bilateral or you suspect there may be auto-immune conditions going on, but it has to be targeted and it has to be patient based again. And I think the trick with medicine is to have an algorithm in your head, but to be willing to have some flexibility when it comes to the individual patient and to tailor your workup and treatment. That this is true for everybody, not just for hearing loss. Tailor your treatment specifically to that one individual patient. Everybody has different needs psychologically and physiologically.

Dr. Jason Barnes:

So a patient has come to your office. They have unilateral hearing loss. You've gotten the audiogram to confirm that it's sensorineural, it's not conductive. So you feel pretty confident this is what we call idiopathic sudden sensorineural hearing loss. What are your treatment options and how do you counsel patients on the decision of treatment?

Dr. Dan Coelho:

Right. And that's a great question. And I think the question that I would ask you back is when are they presenting? And here's the kicker is that we do know both anecdotally and from some pretty good studies that there is a treatment window. And that goes along with the physiology of apoptosis and all the other cellular level mediators that are going on, that if you're going to do a shotgun like approach, like with steroids, that there is a window of opportunity there. Unfortunately for most of our patients, or many of our patients I should say, they're not getting to see us within that window. Less than 72 hours of onset is the goal. But that's rare.

A lot of patients will wake up and say, gosh I don't know, maybe it's a cold. Maybe it's flu. Maybe it's wax. I'm not sure. I'm not sure what's going on. I'll wait it out. I'll wait it out a little bit and I'll give it a week. And they call their primary care doctor. The primary care doctors calls them some Flonase or they go to urgent care and they're of course diagnosed with otitis media and given a Z-Pak and then it could be weeks before they get in to see an otolaryngologist.

I try very hard in our health system to collaborate and work with our primary care providers to identify that a sudden hearing loss is an emergency. And one of the few true otologic emergencies that we have and these docs need to call us directly on our phone. I give everybody my direct number and pager. I'd rather see somebody and it turns out to be wax suddenly, than miss somebody who has a sudden hearing loss that can't get in to see me for four months, which unfortunately happens more frequently than not.

But anyway, back to your question. The goal is hit them early and hit them hard. That's my philosophy, is that again, we don't really know a hundred percent what we're treating. So steroids, although they're powerful and anti-inflammatory, we're not a hundred percent sure. We have some theories as to why steroids work, but they're really just a shotgun approach. So I tend to do very high dose steroids orally, for sure, unless contraindicated. And in some patients, after discussion with them, I may consider doing intrahepatic as well. The science is pretty controversial on this, and there's a lot of studies for and against. I won't continue steroids for a long time. I'll do kind of a short short-term course, about 10 days or so of one milligram per kilogram of prednisone, with or without intratympanic steroids. And if they show or don't show improvement afterwards or incomplete improvement, I'll offer to continue on with the intratympanic steroids.

Dr. Jason Barnes:

And what is your window for offering oral steroids?

Dr. Dan Coelho:

Me personally, I give them about a month. After that, I just don't understand. I can't wrap my head around why it would work. And although there are people out there that will have improvement with steroids, it's hard to know whether or not it would have happened with steroids or without steroids. I'm talking about intratympanic. I know some people will give steroids months and months and months after. Just personally, I can't understand physiologically why that would make any difference above just the natural history. So my cutoff is about four weeks.

Dr. Jason Barnes:

And when you prescribe high dose oral steroids, what other considerations do you have and how do you counsel patients on the use of high-dose steroids?

Dr. Dan Coelho:

Sure. I should mention that four weeks, I counsel patients that diminishing returns with each passing day. It'd be ideal to see the patient within the first 72 hours. So I counsel patients, many patients are very hesitant. Certainly the more savvy patients. Oh, I've heard terrible things about steroids. I don't want to be on steroids. It turns out that steroids for the short term are actually, unless there's contraindications like a brittle diabetic, but even in those patients it can still work. I'll get back to that in a second, but oral steroids, high dose in the short term really doesn't have any downsides other than kind of agitation, sleep irritation increase in hunger, can upset your stomach because of acid production. So I'll often put people on, not necessary PPI, but Tums, or tell them to be aware of the situation, probably to avoid NSAIDs.

But most people, once you tell them, listen you can just take it for 10 days. You don't need a taper, which is true. You generally don't need a taper if it's going to be less than a month worth of steroids. And you just kind of reassure them that steroids are not a bad thing. And then they take it. And not only if they're hearing whether it gets better or not, some patients tend to love it just because it kind of helps them with their overall aches and pains. And it makes them feel better.

But I do 10 days without a taper, there's physiologically no need for a taper. So in patients who are diabetic, I'll tell people, especially if they're able to control and if they're insulin dependent and they're able to do their own sliding scale. I'll tell them, listen, your sugars are probably going to go out of whack and to be careful about what your sugars are doing. Now, If the real brittle people that are going to skyrocket up, which is a potential that you have to be really careful about. And those are the people that I would get on the phone and speak to their endocrinologist or to their primary care doctor or counsel them to say, listen, maybe we should think about only doing intratympanic steroids for them.

Dr. Jason Barnes:

Could you describe what intratympanic steroids are, maybe what your approach is for providing this medication and your timeline for giving it?

Dr. Dan Coelho:

Sure. So I'm again, pretty lucky. I'm able to have a compound pharmacy where I work at my institution, make pretty high concentration of dexamethasone. So I use 24 milligrams per milliliter, but it has to be

compounded and it has to be refrigerated as well. So it has a certain shelf life. If you've got a busy practice, that's great. Some doctors I know will we'll give a prescription to the patient and have them fill out at their own outside compounding pharmacy and bring it in. Some people will use lower dose. Four milligrams is kind of what it comes in, or the standard four milligrams of dexamethasone per milliliter. Some of the early papers written by Lorne Parnes and colleagues were about how methylprednisolone probably transfuses across the round window better, but it has to be buffered and it stings and it's not readily available.

So I use dexamethasone. My technique is similar to how I do any other injections. I don't use phenol. I use a 27 gauge needle. It's one and a half or one and a quarter length and make a pinpoint kind of aeration hole of the anterior superior quadrant. And then after that, I make a second pinpoint in kind of anterior, excuse me, posterior inferior quadrant and slowly drip it in. A couple of things that I do is I warm it up. If I know a patient's coming, I'll kind of tell the nurses beforehand. Or if I seem like we're that way, maybe while the patient's getting a hearing test, I'll tell the nurses to take it out and warm it up. Patients, the colder it is the more it tends to hurt, but more importantly, get a caloric response and patients can get pretty dizzy from it.

So I warm it up. I put it in a TB syringe. You don't need too much less than a CC is plenty. Probably half a CC is fine. And I have the patient, of course I talk to the patient through all of this. Most patients are comforted by the fact that you tell them exactly what you're doing and when you're doing it. Occasionally patient will say, please don't tell me anything. I just want to close my eyes and get this over with, and that's fine. You got to gauge each person's comfort level, but I find that most patients do better.

if you just tell them everything that you're doing and why you're doing it. So as I'm injecting them, I have them hold on to a yankauer suction in their contralateral hand and put that in their mouth. And the reason for that is I don't want patients to swallow while this is being done because I'm going to leave them in that position for a good 15 to 20 minutes for it to perfuse across the round window membrane. And then I them lay there for about 20 minutes, just kind of straight supine. I want that posterior quadrant just filled, the posterior area just completely filled with steroid to let it transfuse.

In some patients who have had a history of certainly ear surgery or tympanic membrane surgery, or certainly middle ear surgery, there may be adhesions that overlies the round window. You don't know that. You can't necessarily tell that by looking in there. So that's why sometimes steroids work on some people. I should say that maybe one of the factors, why steroids may work intratympanically for some patients and not for others. We know that's true for gentamycin injections, but I can assume the same is true for the steroid injections.

Dr. Jason Barnes:

And how many injections do you offer over what period of time?

Dr. Dan Coelho:

I tell the person before we get into this, that we're probably committing to three. Again, this is me. There's been lots of different studies of varying quality. How long do you do it? How frequently do you do it? Do you do it two times a week? Do you do it once a month? Do you do it? I do it once a month. Excuse me, once a week, I do it once a week and I always get an audiogram before I re-inject because if they're back to normal, objectively by the audiogram, and they feel like they're back to normal or baseline subjectively, then I won't.

But if they don't feel back to normal subjectively or certainly, if they're not back normal by the audiogram, I'll do it for about three. I've found that there's kind of diminishing returns after three. And



again, by that point you're already hitting the month marker. And I'm not really sure what we're treating. I think sometimes all these treatments is to make me feel better, that we're really doing everything we possibly can.

Dr. Jason Barnes:

And what's the role for hyperbaric oxygen therapy in these patients?

Dr. Dan Coelho:

There's some pretty good evidence coming out, mostly from Europe, suggesting that it can be helpful. We have some dive tanks here where I live, but the tricky part is to get that done expeditiously. It can be a pain in the butt for people to get insurance coverage for that within the therapeutic window. Not to mention, you have to have tympanostomy tubes. Advantage of tympanostomy tubes that you need to put in before hyperbaric oxygen, is that it gives them an easy route that you can just drip in the steroids intratympanically. But I think if it was logistically a little bit easier, I'd be more inclined to offer it to more patients. It's just in my practice, there are very few patients that we can make it happen very quickly.

And I'm not so sure, and this is true for all treatments, generally, the patients who were the most desperate are the ones who've had the worst hearing loss, and were the ones that are associated with vertigo or dizziness. And the more severe the loss is, generally the less responsive it's going to be to any intervention, including hyperbaric oxygen. That's not to say that it's not on an individual basis, but I think it's less likely.

Dr. Jason Barnes:

And this might be kind of a guess what I'm thinking question, but what should not be part of the treatment algorithm?

Dr. Dan Coelho:

I think that depends on what's still in your differential. If you're still pretty much locked into the diagnosis of idiopathic sudden sensorineural hearing loss, then I don't think there's too much role for antivirals or bringing patients in house and profusing them with intravenous steroids or thrombolytics or vasodilators or anything like that. I don't think that's practical. There are places around the world that do that. I'm not sure that there's super high quality science to back that up. There is some, when it comes to antivirals, to show that it probably doesn't. I encourage everybody to check out the Cochrane Database, which is updated every couple of years. And that's true, not just for sudden hearing loss, but for a whole bunch of different otologic and otolaryngologic conditions. It's a really great resource for being up to date.

Dr. Jason Barnes:

And when you treat these patients, how do you counsel them on outcomes and expectations?

Dr. Dan Coelho:

I tell people from the get go, you have to be a little careful. People are freaking out at the beginning, and you have to be a little careful in terms of how you manage these patients. If you certainly have dizziness or you've got really bad tinnitus, and you've got hearing loss, this is an incredibly distressing situation for a lot of patients, with good reason. Reassuring patients that things are going to work themselves out, even if audiologically the hearing doesn't improve, a lot of the associated conditions, certainly the

dizziness and the tinnitus are more likely than not, going to improve if not resolve within the better part of a year. But that's a long time when you're talking to somebody who's now it's been two weeks of misery and they're looking at another 50 weeks of hanging in there.

I say for all comers, and this is a generic, generic person that don't know anything about the degree of the hearing loss. All comers, I'll tell patients about a third of patients will get completely better. A third of patients will get partially better, and a third of patients won't get better at all with respect to the degree of hearing loss. The other things like tinnitus and dizziness do tend to get better. So there's a lot of hand-holding that has to happen when you do that. I don't start talking about rehabilitative options, even in patients that I have a low suspicion that they're going to improve. I don't start talking about that until down the road. It's just too much to handle for the patients. Too much coming at them all at once.

Dr. Jason Barnes:

And how do you follow up with these folks?

Dr. Dan Coelho:

I keep a tight leash on them. I try to, at least. Not everybody does of course, but I'll bring them back certainly during the duration of their treatment, if they're getting salvage therapy steroids, and as we start heading towards the month marker, then we'll start talking more about rehabilitative options. Be it hearing aids or crosses, bi-crosses or even cochlear implants, Bahas, things like that. I start introducing that into the discussion around a month to month and a half later. And see again, you have to tailor it to the individual patient, but I can feel them out. I feel them out and I kind of go down that road of hearing aids and crosses and Bahas and cochlear implants. Again, depending on the severity and depending on the patient.

Dr. Jason Barnes:

Well, I think we've covered a lot of this topic. Is there anything that we haven't talked about that you think is worth mentioning?

Dr. Dan Coelho:

I think the clinical practice guidelines that are put out by the Academy are really helpful, but I would caution on holding it to too strongly, especially with respect to the word guideline. It's a really good document. If you read the full, and I do recommend everybody, particularly otolaryngologists and training, read the whole document because it's a really good summary of what data is out there and what good data is out there and what bad data are out there. So in the end, when you look at the summary of the guideline, what they call the key action statements, there are some that are strong recommendation or for or strong recommendation against, and those are based on strong evidence. And there are some that are kind of option or mild or things where there's no data to suggest that it's helpful and a lot of what we do is certainly anecdotal.

These days with good reason, it's very hard to do really good, high quality placebo controlled studies, prospectively, randomized, double blinded, et cetera, against a control that is a non-intervention. You can't really do that ethically. So bear that in mind when reading these guidelines that the recommendations for or against are important, but it's really the background reading that's in those 40 pages of detail that are really the meat of the matter. That really gives you an idea of what's out there.

Dr. Jason Barnes:

Awesome. Well, thank you so much for joining us here today. I'll provide a quick summary and I also did want to hit those key action statements just for completeness. So in summary of what we talked about today, patients typically present with hearing loss over 72 hours, though this can be hard to parse out, especially if they've seen other providers first. And this can be accompanied with oral fullness or tinnitus. There are some risk factors to hearing loss like hypertension, hyperlipidemia, other things like that, but it's not always apparent. On physical exam, you want to do a good head and neck exam, including an ear exam and a tuning fork exam. And the etiology of this is still unknown, but can include viral infection and vascular compromise.

Differential diagnosis is long, and so your workup should include imaging, including MRI to rule out retrocochlear pathology. But the big part of your workup is going to be an audiogram, and lab workup is not routinely required.

Treatment can involve oral steroids, intratympanic steroids or hyperbaric oxygen therapy, and should not involve antivirals, thrombolytics, vasodilators, or vasoactive substances. And to review the key action statements from the 2019 guidelines, we should exclude conductive hearing loss when these folks present and assess for any modifying factors through the physical exam and history taking. CT is not recommended here. We do want to get an audiogram. We do not need to obtain routine laboratory tests, but it is recommended that we get an MRI or an ABR to rule out retrocochlear pathology.

As Dr. Coelho alluded to, there are some optional recommendations in terms of treatment, which include oral corticosteroids within two weeks of symptom onset, intratympanic steroids as a salvage therapy within one month of onset, and then hyperbaric oxygen therapy.

Dr. Coelho, thank you so much. Is there anything you'd like to add?

Dr. Dan Coelho:

My pleasure. I think that's a great thing that you're doing and certainly in these crazy times it's great to have alternative ways of educating ourselves, keeping up to date and I'm honored to be a part of it.

Dr. Jason Barnes:

Awesome. Thank you so much. I'll now move into the question asking portion of our time here. As a reminder, I'll ask a question, pause for a few seconds and then give the answer. So the first question is, what is the official definition of sudden hearing loss?

Again, referencing those 2019 guidelines, the "official definition" is over 72 hours a patient experiences sudden hearing loss, and the audiogram shows an asymmetric 30 decibel loss in three consecutive frequencies, but it is worth pointing out that clinically. We need to parse through this to determine if there's a clinically meaningful hearing loss that should be treated even if it doesn't meet these requirements.

Our next question is, what imaging should be obtained in the patient with sudden sensorineural hearing loss?

Imaging should be routinely obtained for folks suffering from sudden sensorineural hearing loss and this should be in the form of an MRI to rule out retrocochlear pathology, and remember that even if they improve with steroids an MRI should be obtained.

And finally, what are the treatment options for sudden sensorineural hearing loss and what is the potentially proposed window for treatment?

Options for treatment for idiopathic sudden sensorineural hearing loss include oral steroids, which are typically offered within two weeks of hearing loss, but can be extended depending on the clinical situation, intratympanic steroids, which can be offered up to six weeks as salvage therapy and hyperbaric oxygen therapy as well. Thanks so much for listening and we'll see you next time.