



Episode 260: Neck Pain, Migraine, and Headache: How Are They Related?

Lindsay Weitzel, PhD:

Hello everyone, and welcome to HeadWise, the podcast and videocast of the National Headache Foundation. I'm Dr. Lindsay Weitzel, I'm the founder of the education and support group MigraineNation, and I have a history of chronic and daily migraine that began at the age of four. I'm excited to tell you that I'm here today with neurologist and headache medicine specialist Dr. Paul Mathew. Hello, Dr. Mathew, how are you today?

Paul Mathew, MD:

Great, Lindsay. Thank you for having me.

Lindsay Weitzel, PhD:

Thank you for being here. Dr. Mathew is an assistant professor of neurology at Harvard Medical School, and a member of the board of directors of the National Headache Foundation. He is also an affiliate member of the Division of Sleep Medicine at Harvard Medical School. He is here to talk to us about a topic that is near and dear to my heart, and I'm super excited to hear what he has to say.

We're going to discuss the topic of neck pain and headache and how they're related. Dr. Mathew has published a very interesting paper on this topic on how we can differentiate between occipital neuralgia, cervicogenic headache, and migrainous cervicgia. So, if you're someone who experiences some neck pain, neck discomfort along with your head pain, or at other times, please listen in. This is going to be very interesting. Dr. Mathew, let's start with why you feel this topic of the relationship between neck pain and headache is so important.

Paul Mathew, MD:

Well, I don't need to tell the audience, but it is worth repeating, migraine is incredibly common, 1 in 5 women have migraine, 1 in 16 men have migraine. And among all these people with migraine, up to 70% of people experience some degree of neck pain or discomfort with their migraine. So, it is incredibly prevalent. A lot of the time during appointments, both the patient as well as the clinician are so focused on headache, they don't really talk about or address neck pain at all.

And more fundamentally, with my patients, I like to talk about triggers, which I think is really, really important. And I use a visual of this is where you start your day and this is what you need for a full-blown migraine, if you didn't sleep all the night before, you start your day here. And then it doesn't take much stress, missing meals, hormonal fluctuations, weather fluctuations, neck pain, boom, full-blown migraine. But what many people don't realize is anywhere between here and here, you could have a little bit of light sensitivity, a little bit of a dull achy headache, but once it reaches this point, everything goes off. So, in terms of trigger mitigation, when you look at how 70% of people with migraine have some degree of neck pain, it is something, in addition to sleep, that I always talk about

with my patients. And in general, both clinicians and patients should really talk about, yes, there's a lot of exciting new therapeutics out there, but also trigger mitigation is just as important in my opinion.

Lindsay Weitzel, PhD:

Just be clear about what we're talking about today, what are the main diagnoses that you put forth as involving headache and neck pain?

Paul Mathew, MD:

That's a great question. And that's what this article really parcels out. So, there's a term that I coined in this article called migrainous cervicgia. Now that's a little bit of a mouthful for a lot of people, but I will try to distill it down to its simplest form. So, the vast majority of people with migraine, and it's part of the diagnostic criteria, have light sensitivity. And people will oftentimes go to the optometrist or the ophthalmologists looking for a reason why. So, your eye is working just fine. Unfortunately, the signal that it's sending is normal, but when it gets to the brain during a migraine, it is amplified and lights are incredibly bright and uncomfortable, which is what we call photophobia. Likewise, your ears are working fine. The signal it's sending is working fine, but the brain amplifies it.

So, believe it or not, many people with migraine, they can have zero neck pathology and their neck neurons are actually sending normal signals. But during a migraine, those signals are now elevated and they have discomfort or even neck pain. So that's what I call migrainous cervicgia. It only occurs during the migraine, and a lot of patients think, oh I must have some neck problem, when in fact it's actually migraine amplifying a normal signal into the perception that it's not right. And so, a lot of these patients will have massages, they'll get acupuncture, they'll get all these kind of neck modalities thinking, oh, I must have a neck problem, when in fact their neck is just fine.

Lindsay Weitzel, PhD:

So that would be the first diagnosis, is migrainous cervicgia, which is so interesting because I think that can be very hard to differentiate what's wrong with my neck, what's wrong with my head. I think another one is cervicogenic headache. Is that correct? Can you tell us about that one?

Paul Mathew, MD:

Yeah. And sorry, just to dovetail to the last topic, for people with migrainous cervicgia, if they treat their migraine early enough, to their surprise the neck pain doesn't really even come on or is not as intense. Or if they go on the right preventative treatment and they're having less frequent migraine, they'll notice, you know, I don't remember the last time I had neck pain, because, again, they're so tied together. So adequate treatment of the migraine can be both diagnostic and therapeutic for that migrainous cervicgia neck pain.

Lindsay Weitzel, PhD:

So, moving on to cervicogenic headache. Can we talk about that one next?

Paul Mathew, MD:

Absolutely. So unlike migrainous cervicgia, which is really contained within when someone has a migraine attack, cervicogenic headache is when somebody has neck pathology of some kind, whether it's arthritic changes, compression of certain structures, where they will have this kind of gnawing neck pathology, which when that gets bad enough or in combination with stress, not sleeping, all these other things, can trigger a migraine. So those are the people where if you address their neck pathology, a lot of the time, their migraine frequency and intensity will improve. In the examination room, these are patients where they may not have a migraine, but you do range of motion, you check their neck out and they will complain of neck pain and tightness between migraine episodes, which often is amplified during a migraine episode for the same reason we discussed with migrainous cervicgia.

Lindsay Weitzel, PhD:

Do they always end up with a migraine-like headache, or is it sometimes a tension-type headache? Is there more than one kind of headache that you can have?

Paul Mathew, MD:

That is a great question. And I love to put things in kind of the patient's perspective. So, I often tell people that primary headache disorders like tension-type headache or like migraine, they oftentimes will bubble over and occur when you're exposed to so many triggers. So, in a person who has the genetics for migraine, when that cervical problem or neck problem becomes bad enough, it'll trigger a migraine. Now in somebody who has tension-type genetics, when that neck pain gets bad enough, it'll trigger a tension-type headache.

Many headache specialists agree on this, that the general population, the vast majority of people are wired to either have a migraine or tension-type headache depending on their genetics. So, you put someone through sleep dysfunction, hormonal dysfunction, stress, neck pain, all these other issues, somebody with a tension-type genetics, just to review, mild to moderate pain, a pressing sensation, no nausea and either mild or moderate intensity and either light or sound sensitivity. And that's a tension-type headache, not really disabling, but more annoying. While somebody with migraine, throbbing, pounding, disabling pain, light, sound bother them, and some nausea.

Lindsay Weitzel, PhD:

And something I wanted to ask here because I do think that oftentimes physicians can get stuck on this and we'll get stuck on this topic when we're being interviewed in a situation with a new doctor, for example. Do patients usually have a history of some sort of neck trauma or something when they have this diagnosis? Is that necessary?

Paul Mathew, MD:

So not necessarily. A lot of the time that is the case, whiplash injuries, motor vehicle accidents, sports injuries, all those things. But more commonly what do we do every single day. We are in this anterior position where we're eating, texting, driving. We're always in this anterior, forward position. And so, when you do that, your spine basically does this. And you probably know some senior citizen friends and colleagues where when they maintain that posture for long enough, it almost becomes permanent.

And with that comes arthritic changes as well as what we're going to be talking about next, which is occipital neuralgia.

Lindsay Weitzel, PhD:

Just as you said, let's talk about occipital neuralgia. I find it very interesting when I read your article, because I felt like you challenged some of the conventional things patients are taught about this diagnosis, so I'm excited to hear what you have to say.

Paul Mathew, MD:

Absolutely. So I do like to reference kind of a well-known phenomenon of sciatica. Most people know sciatica. I have a pinched nerve in my lower back. I have back pain. And then when that flares, I get burning or shooting pain going down the leg. So occipital mineralogy is kind of like sciatica of the back of the neck. So coming out of the back of your neck are nerves that actually go through muscle tissue and fascia, twist, and then go up the back of the head. So as you can imagine, it is a pretty tortuous course for a normal person. You now introduce that whiplash injury, that car accident, sports injury, or just years of bad posture, that nerve is now getting compressed. And these patients often say, if I'm driving, I look over my shoulder, I get this quick stab of pain going off of the back of my head, or if I lay down just in the right spot, I'll wince as well, because that kind of nerve activates. For many of these patients, whether it's around the time of their accident or years of chronic bad posture, they will often tell you, you know, Dr. Mathew, when I was in my teenage, 20, 30s, migraine would be a throbbing, pounding headache in the front of my head. But when I got older, they started to occur in the back of the head. And then when you ask a little more carefully, they'll say, you know, actually I have headaches and I've head pains. You might think I'm crazy. And I'm like, no, no, you are speaking my language completely.

So, a lot of the time these patients later in life, as we said, will develop occipital neuralgia, and then when that gets bad enough, enough of that shooting, jolting pain back here, then it activates the migraine. Then they'll say as it gets bad, then I start to have this throbbing, pounding in the front of the head, light will bother me, sound will bother me, nausea, vomiting, so on and so forth.

And so, the frustrating thing here is that patients will take their migraine-specific treatments, throbbing, pounding, light, sound, nausea will get better. It doesn't really touch this pain because again this is a neuropathic nerve pain. And so, a lot of these patients will go on to develop constant daily headache where these migraine treatments are somewhat effective but never really curb this pain.

The other problem in clinical diagnosis is, number one, as soon as clinicians hear light, sound, nausea, vomiting, they say, okay, you have migraine. They don't even talk about the neck or even investigate the neck. So that's the biggest problem. Diagnosis doesn't happen.

The second biggest problem is people will do occipital nerve blocks which are injections back here. And how these are performed are highly variable. Many people will do very, very small volumes which basically numb the nerve temporarily, and then the pain just comes back. And sadly, those patients will say, oh, it didn't work, it didn't last. And then the clinician says occipital nerve blocks did not work for patient, and then any doctor they see after that, what do they say? Oh, it didn't work for the patient, we're not even going to bother again. When in fact large volumes actually cause a stretch, so this is

your skull and this is your scalp. If you do a large volume block, it actually stretches the muscle tissue and fascia that's entrapping that nerve. And that oftentimes is what leads to the greatest relief.

Lindsay Weitzel, PhD:

That is so interesting to hear. I know many patients have had more blocks than they could ever count. And if they work, they don't work very long for some people. So that's so interesting. But another thing I think you said is can occipital neuralgias sometimes be bilateral? In other words, on both sides?

Paul Mathew, MD:

Commonly it is. I mean most people do have a dominant side. But yeah, it does happen quite frequently bilaterally. Because again, you only have one neck, and all those nerves are pretty closely clustered together. So, if you're going to have trauma or even just years of bad posture, chances are it's going to affect both. Part of that, and again, we could do a whole other podcast talking about sleep and neck positions, but oftentimes people will have a dominant side, either because the trauma was on that side or they sleep on that side. So, a lot of the time the nerve pain is worse on one side than the other.

Lindsay Weitzel, PhD:

And can you show us where, we have had episodes before, where doctors show where the specific pain is for different diagnoses. If you do have occipital neuralgia, does it come up to the face? Does it usually stay in the back?

Paul Mathew, MD:

Lindsay, that was a great question. I'm a firm believer that a picture is worth a thousand words, and I actually pull up these images when I speak to patients and explain things to them. So, as you can see here, the green lines here represent those nerves that go up the back of the head. There's the greater occipital nerve that goes right up to the top of the head. And this is a 2D image, but the lesser occipital nerve actually wraps around the back of the head and towards the ear. And there's actually some branches of that nerve that innervate part of the ear. A lot of the time people will say, I have neck pain, I have pain in the back of the head, and my ear bothers me a little bit too. So, hopefully that'll give patients some insight of, oh yeah, why does my ear bother me. It's because there are branches of that nerve that go over there.

So, a large volume nerve block, as you can see, the red line there, this is an image from one of the textbook chapters that I wrote, that red line is basically where the injection is performed. And as you can imagine, if you do that kind of an injection and stretch those areas, a lot of the time that very tight muscle and fascia actually get stretched out. The term that we use in the papers (hydrodissection) – hydro meaning liquid, dissection meaning it's separating those very tight tissue planes.

Lindsay Weitzel, PhD:

That is very interesting. I think that there's a lot of misunderstanding in the community about occipital neuralgia, and I think that that helped clarify some of it. So, thank you for that. I love the way you speak about that. I do think you have a graphic to share with us that can illustrate the difference between

these diagnoses that we just discussed. And I've seen it and it's really great. And I'm wondering if you can pull it up and explain it a little bit, hopefully in a way that people that are only listening can also understand.

Paul Mathew, MD:

Yes, Lindsay. Thank you. And again, this is from the same article that you had mentioned earlier. This is basically a timeline of migraine. Here the yellow represents central sensitization which I like to call sensory amplification, so the inputs that are going to the brain are all getting turned up, so bright lights are unbearable, noises are unbearable. And same thing with people with migrainous cervicgia as you can see in that yellow rectangle. So that neck pain only occurs during the migraine phase. And as you can see, when the migraine attack comes to an end, that neck pain also comes to an end, which we call migrainous cervicgia. Now on the other hand, cervicogenic pain, which like I said, arthritic pain in the neck, a neck tumor or mass, those kinds of things, as well as occipital neuralgia, those can flare during the migraine but also continue to occur between migraine attacks, which is why that red rectangle kind of extends out from when after the migraine has come to an end, and also occurs before the migraine even starts.

Lindsay Weitzel, PhD:

I have a question a little bit related to this. If people find that their neck pain and migraine improves with chiropractic manipulation, for example, does that help determine which area they might fit in?

Paul Mathew, MD:

So, if it improves with chiropractic manipulation, and as far as I'm concerned, massage, chiropractic manipulation, acupuncture, dry needling, all these things in my practice can be useful. I consider them springboards, meaning the patient gets this treatment, their neck feels better, but what they should be doing thereafter is practicing the stretching maneuvers that either their chiropractor, physical therapist, or I actually encourage patients and demonstrate stretches in my office. Doing those stretches is actually the maintenance that actually keeps the neck in check and prevents the need from having to go back to the chiropractor, acupuncture, dry needling, massage that they're kind of doing. So, I think it's really important for people to realize, doing it for maintenance purposes is expensive, it's time consuming, and a lot of time it doesn't fix the problem. And a lot of the time, the thing that will fix the problem is self-stretching and actually doing that maintenance on your own.

Lindsay Weitzel, PhD:

Does it help determine which category a person fits in?

Paul Mathew, MD:

So back to your question. Yeah, if they do notice an improvement in their migraine frequency and intensity from attending those things, chances are they're in this red line or red rectangle because it serves as a trigger. While if they have migrainous cervicgia, that's really not going to have much of an impact.

Lindsay Weitzel, PhD:

Interesting. Well, is there anything else you would like to add to this super interesting topic before we go today? I really, really love this episode. Thank you so much.

Paul Mathew, MD:

Yeah. So, a couple kind of high points, I will say, my group, we actually did a study looking at patients who were coming to my practice with a chief complaint of headache or refractory headache. And we found about 25% of these patients had some degree of occipital neuralgia that either nobody had diagnosed or they got low volume nerve blocks and they just didn't work very well. Then we tried larger volume nerve blocks and they worked very effectively. So, 25% is a much larger percentage than what's reported in a lot of the literature.

And again, the reason is if you're not looking for it or asking about it, you're not going to detect it and you're not going to treat it. That's number one. And then number two with these occipital nerve blocks with that large volume, people often ask what's the response rates? And I often tell people for some lucky patients I do a block once, it causes that stretch, they just never have that pain again. Now they still have their migraine, but that particular shooting pain goes into complete remission. For others, it's months, weeks. And the way I perform them it's with just anesthetic. There's no steroids, so certainly it's something that can be repeated as needed.

Lindsay Weitzel, PhD:

This has been really interesting. I hope everyone learns something today. And thank you so much for being here Dr. Mathew. Everyone, please come back again for the next episode of HeadWise. Bye-Bye.

Paul Mathew, MD:

My pleasure. Thank you, Lindsay.

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