



MIGRAINE WORLD SUMMIT

TRANSCRIPT

INTERVIEWS WITH WORLD-LEADING EXPERTS

WHEN HEADACHE STARTS BEHIND THE EYES

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Introduction (00:05): Blurred vision can sometimes be mistaken [for] or called a migraine aura, but it's not a migraine aura because migraine aura comes from the brain; it comes from the back of the brain. There's no place in the brain that can be disturbed that causes blurred vision. You can get vision loss, but not blurred vision, right, out-of-focus vision. Probably the changes that cause blurred vision and migraine come from the cornea or from the cornea related to the tear film.

Lisa Horwitz (00:37): Cluster headaches, migraine, and tension headache can all cause pain behind the eyes. In addition to this pain, people may experience pressure, dry eye, and some vision loss. Are all of these symptoms attributed to migraine, or do they indicate other conditions? Let's welcome our guest, Dr. Deborah Friedman, to explore this topic. Dr. Friedman, welcome back to the Migraine World Summit.

Dr. Friedman (01:04): Thank you. It is really great to be here again.

Lisa Horwitz (01:07): I feel like we have a lot to cover in today's talk, so we're just going to jump right in. What type of headache most commonly causes pain or headache behind the eyes?

Dr. Friedman (01:20): It's probably tension-type headache because tension-type headache is the most common type of headache in the whole world. But tension-type headache usually produces pain on both sides, and it's typically in the forehead; I would say not as commonly behind the eye. So the runner-up, if not the winner, would be migraine. So, migraine again can be on either side of the head or just one side, but it is commonly behind the eye. Typically throbbing if the rest of the migraine pain is throbbing, and then you would expect to see all of those other typical features that you get with migraine, right — sensitivity to light and noise, maybe nausea and vomiting, maybe aura symptoms.

Dr. Friedman (02:07): Occasionally, people with migraine will also get what we call trigeminal autonomic symptoms, and those might include tearing from the eye, a little redness of the eye, maybe a feeling of dryness in the eye. But migraine, as you know, it's a recurring headache, and it runs its course and it goes away, so that the pain doesn't go on for long periods of time with migraine.

Lisa Horwitz (02:35): Can cluster headache also cause pain behind the eyes?

Dr. Friedman (02:38): Cluster headache is probably the most notorious for causing pain behind the eye. That's typically where cluster headache is located. So, my patients will say, "If I took a spear and I put the spear right through my eyeball and put the other spear right through my temple where those intersect, that is where my pain is coming from," so it's right behind the eye. Again, the pain is, it's like a spear sometimes, or a hot poker, or it's just excruciating pain. People say they want to just take their eye out. And again, other symptoms that go along with cluster headaches — so the redness of the eye, the tearing, the runny nose, sense of fullness in the ear. What else? Droopy eyelid can also occur, change of the pupil size. The pain doesn't have to be isolated to behind the eye. Often it'll go into the jaw, it can go to the temple, it could even go to the back of the head or the face but it's excruciating, and generally people get restless and they can't sit still or they can't lie still, and it's just horrible pain that could go on anywhere from 15 minutes to a few hours.

Lisa Horwitz (03:52): And that's for the cluster headache, that it's this intense, shorter burst of pain.



Dr. Friedman (03:57): Then there are other trigeminal autonomic cephalalgias — kind of like cousins of cluster headache — which are much rarer than cluster headache, but they produce the same kind of pain, it just doesn't last as long. So, the paroxysmal hemicranias: There's one variety that's called episodic, there's another variety called chronic. It can be really hard to distinguish that from cluster headache, but they typically last less than half an hour.

Dr. Friedman (04:27): And then there's a really rare kind of headache that's called SUNCT. See if I can remember what it stands for: short-lasting unilateral, neuralgiform headache with conjunctival injection and tearing. So, this is a very brief headache; it usually lasts seconds up to a few minutes. Again, stabbing pain in the eye with conjunctival injections, which means the eye gets red and teary, and sometimes people will get other autonomic symptoms with that type of headache. But again, it's excruciating and tends to occur much more frequently during the course of a day than cluster does, but they're all sort of related.

Lisa Horwitz (05:08): What is ocular migraine?

Dr. Friedman (05:12): All right, well, you're going to get me started here. There's no such disorder as ocular migraine. Look it up in the International Classification of Headache Disorders; it doesn't exist. Most people, when they use the term ocular migraine, they're talking about migraine aura without headache. So they're seeing flashing lights, zigzag lines, whatever, but they may not be getting much of a headache with it. That is actually called migraine visual aura. It's not called "ocular migraine" because the symptoms aren't coming from the eye, right? "Ocular" means eye. So there is no such thing. People also call it "eye migraine." Again, there's no real diagnosis called "eye migraine" or "eye headache." Some people refer to their cluster headaches as eye headaches, but you have to kind of take the whole history and tease out what's going on to really get an appropriate diagnosis.

Lisa Horwitz (06:13): So, if someone is getting pain located behind the eye, like you said, a spear and a spear, is that because something in the headache process is inflaming an optic nerve?

Dr. Friedman (06:26): Well, not really. So, the optic nerve can generate pain when it's affected, and the typical problems that cause that are — or the prototypical cause is called the optic neuritis, where there's inflammation of the optic nerve. But it's not the nerve itself that generates the pain. It's the sheath or the lining around the nerve because that is innervated by the trigeminal nerve, which is well known to us all, right, as the nerve that generates face pain and head pain. So it's probably not from optic nerve involvement per se, but all of those structures in the orbit, and behind the eye, and lining the brain in the front of the head — those are all innervated by the trigeminal nerve, so that's probably why it seems to be coming from that area.

Lisa Horwitz (07:25): Are there any other headache types that may contribute or cause pain behind the eyes?

Dr. Friedman (07:31): Absolutely. So, of the primary headache disorders, I think the two that are the most important to know about are hemicrania continua and primary stabbing headache. So primary stabbing headache is just what it sounds like: people get these just quick stabs of pain — it went under the name of "ice pick headaches," "jabs and jolts headache," "lightning pain headache" — they can occur anywhere in the head, but they can also occur in the eye or in the eye area, and they're benign typically. They often happen in people who have other kinds of primary headache, such as migraine and cluster headache, but they're severe. They're brief but



severe. So they're kind of scary, and people always often end up going to see their eye doctor because of them, but it's not really an eye problem.

Dr. Friedman (08:28): And the other one is hemicrania continua — “hemicrania” being half of the head, “continua” being continuous. So, this is pain that is kind of always there. It's on one side of the head, but it doesn't have to be the entire side of the head — could only be in the back; it could only be in the front — and when it's only in the front or when it's the whole side of the head, then it can affect the eye area. And the pain tends to sort of wax and wane in its severity. Sometimes people just don't even pay attention to it because it's so mild; other times it gets more severe, and it sounds a little more like migraine. But again, if it's only in the front, it seems like it's coming from the eye, but it's not really; in reality, it's a primary headache disorder.

Lisa Horwitz (09:16): That does sound very confusing, especially for people who may not think they have a headache disorder. They might not even consider that it could possibly be a headache because the pain seems to be originating from the eye.

Dr. Friedman (09:29): Exactly, exactly. And I will say that a lot of ophthalmologists are not familiar with this condition either, so it can be confusing from all sides.

Lisa Horwitz (09:37): So how can you tell, or is there a way to tell, if you have pain behind the eyes from an eye condition versus a headache disorder?

Dr. Friedman (09:49): Headache disorders typically — with the exception of hemicrania continua — typically produce episodic pain, so that's one way to figure it out. The other way is to either see your eye doctor or see a neurologist and get an exam and make sure that there's nothing else going on.

Lisa Horwitz (10:08): Can the sinuses play a role in pain behind the eyes?

Dr. Friedman (10:13): Yes, they can. So, sinus disease or sinus infections are one of the causes of pain behind the eyes. Typically, it's, I would say, aching pain, and usually it's on both sides, but usually again, it's associated with pain over the sinuses. So it would be, I think, unusual for people to get mostly just eye pain from a sinus condition.

Lisa Horwitz (10:37): Is there any connection with thyroid dysfunction and headache behind the eyes?

Dr. Friedman (10:43): There are a couple of things associated with thyroid dysfunction that might cause pain behind the eyes. And just having hyperthyroidism or hypothyroidism potentially could also be associated with dryness of the eyes. The condition that we associate with thyroid disease that causes eye pain is called thyroid eye disease. Another name for that is Graves' disease. So, this is a condition that is autoimmune. Generally, in Graves' disease, first of all, there's dryness of the eye, and dry eyes can be very painful. Dry eye in and of itself is a very common cause of eye pain, but in Graves' disease, the eyes kind of get pushed forward, so they're more exposed to the air, and so the cornea in the front of the eye gets dry, and also the lids sometimes come, kind of — we call it lid retraction — the eyelids kind of move backwards a little bit. So when people blink in thyroid eye disease, they don't necessarily lubricate their cornea well, the eyes are typically red, sometimes the eye movements are affected, so people



will get double vision with it, and they get this wide-eyed stare. So you could see the whites of the eyes above the eye and below the iris of the eye, so that's associated with thyroid disease.

Dr. Friedman (12:16): The other thing that can uncommonly affect the thyroid function is a pituitary tumor. So, [the] pituitary gland lives behind the orbits, at the base of the brain, behind the eye sockets. And if it gets large enough, it can cause pain, it can cause a headache, it can potentially cause vision loss, it can cause double vision. And the pituitary gland is sort of the master gland of hormones, and so if it affects the hormone called [thyroid-stimulating] hormone that comes with a pituitary gland that regulates the thyroid, sometimes it could also be in that relationship, if you will, between thyroid and eye problems.

Lisa Horwitz (13:07): So there really is a wider range than I think I even expected of conditions that can really affect the eye and cause pain in and behind it. You touched upon dry eyes and how painful they can be. Can dry eyes cause pain beyond the surface and back where we were talking about before, behind the eyes?

Dr. Friedman (13:33): Yes, that's possible. Typically, it is on the surface, so the cornea — that clear part in the front of the eye — is the most densely innervated structure in the body. I mean, like, one little speck of dust right in your cornea, and it hurts like crazy. So if your cornea doesn't have a nice layer of tears over it, if it gets dry, that cornea is going to be screaming at you, and it usually causes pain in the front of the eye, but sometimes it can cause pain behind the eyes.

Lisa Horwitz (14:07): If you are taking any medications that list dry eye as a potential side effect, can this complicate any other headache conditions that you have that cause pain behind the eyes?

Dr. Friedman (14:21): It can, and actually some of the medicines — the older medicines — that we use to treat headache can cause dry eye, particularly the tricyclic antidepressants, like they cause dry mouth, right? They cause constipation, they cause dry eye, probably all for the same reason — you get dry.

Lisa Horwitz (14:39): Does glaucoma contribute to headache behind the eyes or generalized eye pain?

Dr. Friedman (14:44): There are two kinds of glaucoma, right? One is the really common kind; that's called open-angle glaucoma, where the fluid in the eye is not being absorbed rapidly enough and so it builds up pressure. Most people with glaucoma do not have pain at all. Sometimes people with very advanced glaucoma or who have had multiple surgeries on their eye for glaucoma can have eye pain.

Dr. Friedman (15:10): But the other kind of glaucoma, which is called angle-closure glaucoma, can definitely be painful. That's actually one of the first signs of it. So, in this case, there is a very sudden blockage of fluid draining from the eye. So, the pressure in the eye builds up very rapidly, and people will generally, first of all, get blurred vision — usually they can't see well up close. And they will also get pain around the eye. Often the eye gets very red and bloodshot, and when you measure the pressure, it's way, way, way up. Nausea and vomiting can also occur, and these tend to occur in episodes for some people. They can be provoked by walking out of a dark movie theater into bright light, and that can sometimes trigger one of these episodes.



Dr. Friedman (16:09): And if the patient has an incomplete episode and it just resolves on its own, it actually kind of sounds like migraine. So it can be misdiagnosed as migraine until it really becomes complete, and it doesn't go away like migraine should. But that particular condition can be a rare side effect of taking topiramate, which is also very relevant to us in the migraine world, in which case it's typically both eyes at the same time. The other form of it is only one eye at a time, but when it's drug-induced, it's usually both eyes at the same time, and it happens within a couple of weeks of starting the drug.

Dr. Friedman (16:52): So when we see people with angle-closure glaucoma, we always want to know, "Have you started a new medicine recently?" There are a lot of different medicines that can actually cause this. Although in the headache world, topiramate is probably the one we see the most common, even though it's rare. Anybody who's taking topiramate that all of a sudden gets a rapid change in their vision and pain should go to the emergency room. It's a very treatable problem, and it usually goes away and everything's fine once it's treated, but if it ever happens to you, you can never take topiramate again. That's it, done, because it'll happen again.

Lisa Horwitz (17:34): That's really important to know. I'm glad that you brought that up. Are there any other eye conditions that we haven't touched upon that can cause pain behind the eye socket?

Dr. Friedman (17:45): Well, eye strain could do it. Now, in my opinion, eye strain is sort of overly blamed for headache. And oftentimes, especially in children, they'll end up going to see the eye doctor when they have headache — they really have migraine — just to make sure it's not the eye. But eye strain can cause headache and if your eyes are not focused properly, if you're not wearing the right prescription — either glasses or contact lenses — or refractive surgery. Yeah, after a while, it can cause headache. It is true that refractive error or eye strain can cause headache.

Dr. Friedman (18:26): Dental pain occasionally causes headache. It's referred pain from the teeth, or from the gums, or the jaw, and sometimes that can cause headache. Problems with the circulation behind the eye, which causes vision loss. It's called ischemic optic neuropathy. It usually happens to older people and causes relatively sudden vision loss in one eye or the other. Usually it's painless, but sometimes there can be a little bit of aching around the eye that goes along with that one too.

Dr. Friedman (18:57): We kind of touched on optic neuritis when talking about that lining — the meninges around the eye around the optic nerve. But optic neuritis typically causes eye pain that's produced with eye movement. So anytime you kind of move your eyes from side to side, it hurts, and that's because the optic nerve in that sheath around it gets stretched, and it's all inflamed. And that's either accompanied by or followed by vision loss, usually in one eye, and that vision loss typically progresses over many hours to a few days, and it can be mild or it can be pretty severe. Again, treatable problem, sometimes associated with other neurologic diseases like multiple sclerosis, but there are other autoimmune conditions that can be associated with optic neuritis. So again, that's something you'd want to get attention for pretty quick.

Dr. Friedman (19:53): Then there's some rare things, like blood clots behind the eye. So, there's a structure behind the orbit that's called the cavernous sinus, and the sinuses — it just means like a cavity, right? So, we know about sinuses back there that get infected, but sinuses can also contain blood. And so, this particular sinus contains venous blood, and some of the nerves that



supply the eye movements also go through it — it's called the cavernous sinus — and if there is a clot in the cavernous sinus, it's painful. Usually the eye on that side bulges forward; it gets really red and bloodshot. People can actually have vision loss from it. They typically will see double because the nerves that supply the eye muscles also go through the cavernous sinus. So again, this is kind of an emergency.

Dr. Friedman (20:55): And then other things that are kind of vascular — aneurysm behind the eye — can cause pain sometimes without any other signs unless it ruptures. We always want to catch an aneurysm before it ruptures because they can be fatal. And tumors behind the eye — we talked a little bit about pituitary tumors, but there are other kinds of tumors that can live back there. Tumors can also arise in the orbit itself, and usually they cause other symptoms, not just pain. So, vision loss, or double vision, or protruding eyeball that will tell you there's something going on in your orbit.

Dr. Friedman (21:31): There's increased pressure in the brain, which could be from a tumor; it could be just because it happened, and we don't know why — which is called pseudotumor cerebri or idiopathic intracranial hypertension — and it typically causes pain, often it's in the front. So, it can feel like it's coming from behind the eye. And it often also affects vision. And typically, it affects the side vision before the straight-ahead vision, but this tends to happen to young women, typically overweight or have recently had a recent gain in weight, or sometimes it's a medication that causes it. Even a blood clot in the brain can cause it, and so the person will start to experience bad headaches — again, often behind the eye. They may have episodes where their vision just kind of goes out for a few seconds and then comes back. They may hear whooshing noises in their ears, and again, this is often a constant headache different than anything they've had before.

Dr. Friedman (22:34): The other thing that can cause this is a tear in the wall of the artery in the neck, the carotid artery, which is called an arterial dissection. So, there's the blood and there's the arterial wall, and the arterial wall has multiple layers, and the layers can just start to sort of split apart, and when that happens, it causes pain. The pain can be in the neck, it could be in the jaw, it can be around the eye. It also causes what's called Horner syndrome, so the eyelid on that side gets a little bit droopy and the pupil on that side gets smaller than the pupil on the other side. And again, this is kind of an emergency thing, too. It almost sounds like cluster headache. And so sometimes, when people experience it, we have to sort out: Is this cluster headache or is this a carotid artery dissection? And so, we'll scan the arteries and we'll scan the brain just to make sure it's not a dissection.

Lisa Horwitz (23:35): That's a lot. I'm trying to digest all of that, and honestly, I'm feeling a little paranoid now, but ...

Dr. Friedman (23:42): Don't feel paranoid, these things are not common.

Lisa Horwitz (23:45): OK, that's good to know. Now, let's shift back to some of the things that are more common, like cluster headache, tension headache, migraine. When people have pain behind the eyes from one of these conditions, is it also common to have blurry vision, or is this indicative that you might have one of these other issues that we just listed?

Dr. Friedman (24:09): No, don't panic about that either. Blurred vision is really common, especially with migraine. Blurred vision can sometimes be mistaken [for] or called a migraine aura, but it's not a migraine aura because migraine aura comes from the brain; it comes from



the back of the brain. There's no place in the brain that can be disturbed that causes blurred vision. You can get vision loss, but not blurred vision, right? Out of focus vision. Probably the changes that cause blurred vision and migraine come from the cornea or from the cornea related to the tear film.

Dr. Friedman (24:49): So, sometimes with migraine, the eyes can get dry, and that can affect the cornea. If the cornea is not perfectly rounded because the eye is dry, people will start seeing blurred vision, maybe even double vision from that eye, or the other way around. So, we know that in migraine, and cluster headache and its cousins, people will sometimes get tearing, and too much tearing can also cause blurred vision, just like dry eyes can cause blurred vision. So it's probably really an eye surface problem, and it's not really an aura.

Lisa Horwitz (25:28): That's really blowing my mind because I consider my vision difficulties — sometimes I say, "Oh, I'm squinting more than normal." That's sometimes how I can identify an attack is starting. And you're saying that's more likely caused to something not related from the ...

Dr. Friedman (25:45): Yeah, it's probably part of that trigeminal autonomic system, which controls tearing, and that probably is what's doing it. And yeah, it can occur in advance because it's a prodrome symptom, and the other thing that's going to make you squint is if the light is bothering your eyes. So it can be a combination of things.

Lisa Horwitz (26:05): If I'm at home and I wake up and I'm experiencing some pain behind my right eye but no other headache symptoms, how can I tell if I should treat this as a migraine or if I should treat this as something else? Is there a way to tell?

Dr. Friedman (26:23): I would say if this is the first time it happens and you're not experiencing any other problem — there's no vision loss, there's no nausea or vomiting, no double vision, nothing else. I would say probably [try] an anti-inflammatory or acetaminophen and see if it just goes away. Because tension headache can cause pain behind the eye, we can all get a tension-type headache. Usually they're on both sides, but occasionally tension-type headache is on one side of the head. So, I probably would start there, and if it persists and it's not responding to treatment, then probably go see somebody and find out if there's something else going on.

Lisa Horwitz (27:08): At what point do you advise people to see urgent care or an emergency room?

Dr. Friedman (27:14): If there's anything else — redness of the eye, vision loss, double vision — if the pain's severe, excruciating pain, totally out of the ordinary for what somebody would normally experience, then I think they should go get help.

Lisa Horwitz (27:35): What exactly is ophthalmology?

Dr. Friedman (27:38): Ophthalmology is the study of the eyes or the practice of diseases of the eyes, and vision, and the orbit.

Lisa Horwitz (27:48): What conditions can a neuro-ophthalmologist treat that a regular ophthalmologist could not treat?



Dr. Friedman (27:56): So, neuro-ophthalmologists specialize in disorders that affect the eyes and vision, but typically they don't come from the eyes.

Lisa Horwitz (28:05): For people with migraine or another headache disorder who experience pain behind the eyes, does their acute medicine normally help alleviate this symptom, or do they need sometimes something secondary, like you said? Something specific, as a nerve block, as opposed to a triptan or a gepant?

Dr. Friedman (28:25): Most people who have pain behind the eyes that comes from migraine, the pain goes away with whatever migraine medication they use because it's basically turning down all that abnormal firing and the trigeminal nerve and all that release of CGRP that modulates the whole process. So I would say that usually their migraine medication — their acute migraine medications — should work for that.

Lisa Horwitz (28:57): Today, we have gone through a gamut of conditions that can lead to pain in and behind the eyes. Most of them are rare, so if you heard this interview, do not get scared. But we do want to emphasize that if you have new acute extreme pain or vision loss, that you get to see someone immediately to make sure it is not a more serious condition. And that if you do experience pain behind the eyes with cluster headache or migraine, that it should be able to get alleviated with any acute treatments you have that already provide relief to your generalized migraine pain. I want to thank our guest today, Dr. Friedman, for her time and her mind and for giving us all of this great information. Thank you so much.

Dr. Friedman (29:50): You are so welcome.