The Slow Vision Loss That Shrinks Your World Transcript

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Glaucoma Awareness Month Introduction

In a healthy adult, the optic nerve has about 1.2 million nerve fibers going through it. Yes, million through this tiny little space that is about 1.5 millimeters in size, in diameter.

So 1.2 million nerve fibers going through a very, very small space. As we get older, especially into our older adult years, we do lose some of those nerve fibers.

So normally with aging, there is some loss of nerve fibers. However, with glaucoma, it's a very much so accelerated loss of nerve fibers. That's not within normal aging by itself.

Welcome to the IQ Podcast. I'm Dr. Rani Banik here to help you boost your IQ with powerful insights that connect your eyes, your brain and your whole body wellness.

Hi there and welcome to the IQ Podcast where you can gain insights into your health, your brain health, your overall wellness, and raise your IQ. I'm your host, Dr.

Rani Banik. I'm also known as America's integrative eye doctor. And this month, the month of January, is glaucoma awareness month. And in honor of that, I've decided to do a multi-part series on my podcast where I share with you some important insights about glaucoma.

things that you need to know, whether you have never been diagnosed with glaucoma or perhaps you have been diagnosed, or maybe you have a friend or family member who's been diagnosed with glaucoma.

This series will hopefully inform you so you can better understand what the disease is and what you need to do to take preventative steps to prevent vision loss.

What Glaucoma Is and How It Affects Vision

So we're going to get started. Today is part one, Glaucoma 101, The Foundations. Stay tuned. You might have heard that eating carrots is good for your eyes, but what if we told you that there are more foods that can do wonders for your vision?

Introducing, Beyond Carrots, Best Foods for Eye Health A to Z. The new book by Dr. Rudrani Banak, MD. In this eye-opening book, Dr. Banak highlights over 30 nutrients necessary for healthy vision, and shares 40 delicious foods richest in those nutrients.

Hi, I'm Dr. Urdrani Banik and I'm here to tell you there's so much more to eye health than just carrots and just beta-carotene. In Beyond Carrots, you'll learn how to keep your vision healthy and vibrant by using the power of nutrition.

Imagine being able to see the world clearly in all its beauty for years to come. To keep your vision healthy and strong, you need to go Beyond Carrots.

Get your copy today of Beyond Carrots, best foods for eye health A to Z, available on Amazon. Take the first step towards healthier vision and protect your precious eyesight for the years ahead.

Let's get started with glaucoma 101 to lay the foundation. So first of all, what is glaucoma? Well, glaucoma is not just one disease. It's actually a constellation of diseases in which there is damage to the optic nerve in the back of the eye.

Now, I've shown you my eye model before, but I'm going to pull it out here again. And when we typically think about the eye, we just see the very front part of the eye, which is right here.

But in the back of the eye, which is right here, this is the optic nerve, and it connects the eye to our brains. And then so all the visual information is collected by, let me just open this up to show you a little bit.

So we have the retina back here which collects all the light information that comes into the eye and it sends information via the optic nerve which is this yellow structure right here to the brain for processing.

So here this this little round circle right here this yellow round circle is the optic nerve and that's what it gets affected in glaucoma. Now, it's not just damage to the optic nerve that happens in glaucoma.

It's a very characteristic type of damage, which leads to peripheral vision loss. So not our central vision, but our side vision or our peripheral vision gets affected with glaucoma.

And in terms of one of the markers for glaucoma, many people are familiar with eye pressure. And indeed, in some cases of glaucoma, actually in many cases of glaucoma, the eye pressure is elevated.

However, there are some cases of glaucoma in which people have the disease, they have peripheral vision loss, but their eye pressure is normal. So that's a subset of glaucoma.

in which the pressure is not elevated, it's actually very normal, and we call that normal pressure glaucoma. And we'll talk a little bit about that down the road in this series.

But let me just explain to you where I was saying earlier about the peripheral vision loss. So I'm going to show you via this illustration here. The picture on the left is what a normal healthy person would see with normal vision.

You can see the children's faces very well, their features are very clear, the colors are very vibrant, you can see into the periphery. But in a patient with glaucoma, and this is actually a patient with, I would say, pretty advanced glaucoma, you can see that there's almost like a telescoping in of their vision, kind of like a very narrowing of their vision, where on the edges it's very dark, sometimes even black and then the edges are a little fuzzy.

And the person with glaucoma can still see in the center people's faces, but everything else around them is not quite clear. And many people actually have this type of visual field loss or peripheral vision loss, they may not even know it because this is something that happens very, very slowly over time.

It happens over years to decades, so people may not notice that their peripheral vision is kind of closing in on them unless they get tested.

Optic Nerve Cupping and Nerve Fiber Loss

We're going to be talking all about testing in part two of this series, but for today, let's talk first about who gets glaucoma and what are the different types of glaucoma.

So first of all, it tends to happen to people as they get older. And I would say the elderly are at most risk, specifically people above the age of 65, so 65, 70, 80 and above.

However, there are other types of glaucoma that can affect younger individuals. Even there are some types of pediatric glaucomas, congenital glaucoma or juvenile glaucoma.

But those are pretty rare, but the vast majority of people are older when they're diagnosed. And the key about glaucoma, because this type of peripheral vision loss happens very slowly, the key is that we have a window of opportunity to intervene.

happening slowly, there is time, once the diagnosis is made, to intervene, start treatment, start other things in terms

of lifestyle modification and diet, et cetera, to slow down the disease progression and prevent visual field loss to the point where it causes this kind of telescoping inner tunnel vision, which we obviously want to avoid.

Now, when I said that glaucoma causes damage to the optic nerve, it's a very particular type of damage. And we typically call this type of damage cupping of the optic nerve.

Now, if you have glaucoma or if you've been monitored for it, you probably have heard the term cupping before. So, let me explain to you what that means.

So, the picture on the top left. right here is a picture of a healthy optic nerve. It's a circle. The optic nerve is a circle, and typically it has this very bright orange-red appearance, and the blood vessels to the retina come off from the center of the optic nerve.

So you can see these blood vessels coming out here. The center of the optic nerve is called the cup. And again, that's the opening through which these blood vessels enter the eye.

So the cup in a normal person, if you think about the area of the cup compared to the area of the entire optic nerve, we call that the cup to disc ratio, the area of the cup is about 0.4 or less of the entire optic nerve.

So about four-tenths of the entire surface area of the optic nerve. That's a normal optic nerve cup. So cupping is usually 0.4 or less is normal. In patients with glaucoma, what happens is there is just damage to the optic nerve whereby nerve fibers are damaged and eventually die off and the center part of the nerve starts to enlarge.

And so we have an opening there that's bigger and we call that cupping. So that's what optic nerve cupping is. And in this image over here on the right, this person has significant cupping.

I would say 0.7 or 0.8 would be their cup to disc ratio. And when we look at it, this is in cross-section, this image down on the left. This is, again, a normal optic nerve.

These are the blood vessels coming out through the cup. And this is a normal cup. And what happens in glaucoma, and typically, again, in patients with high-pressure glaucoma, is that the pressure damages the nerve at the optic nerve head, and those fibers are lost, leading to kind of like a scooping out of where the optic nerve would normally be.

So that's, again, damage or cupping. Now, just as a fun fact, I wanted to share this with you. In a healthy adult, the optic nerve has about 1.2 million nerve fibers going through it.

Yes, million, through this tiny little space that is about 1.5 millimeters in size, in diameter.

How Glaucoma Progresses Over Time

So 1.2 million nerve fibers going through a very, very small space. As we get older, especially into our older adult years, we do lose some of those nerve fibers.

So normally with aging, there is some loss of nerve fibers. However, with glaucoma, it's a very much so accelerated loss of nerve fibers. That's not within normal aging by itself.

Now, moving on, I mentioned that glaucoma typically causes peripheral field loss. Well, there is a stepwise progression to this field loss. It's not that someone goes from having normal healthy vision to having tunnel vision overnight.

Again, this happens over years to decades, and the typical progression is what we see here in this picture. So A would be someone with a normal peripheral vision, normal visual field.

This little dark spot right here is our normal blind spot. We all have a little blind spot there. And what happens is in

picture B, someone has lost a little bit of their peripheral field kind of by their nose.

So this is the left eye. So imagine you're looking through your left eye, your blind spot's over here. And that dark area, kind of up here, is what we call a nasal step.

And you can see it's darker. Someone's on the visual field test, which we'll talk about in episode two of this series. But the peripheral field is measured by a visual field test.

We can pick this up very carefully, very sensitively with the field test. There's some loss right here. There's some loss up above, too. Now, in the next stage, in C here, you can see that this defect is getting much denser.

It's much darker. So the peripheral field is kind of closing in on this patient's left eye. And also, we're starting to see loss on the bottom. So not only is there loss up above, but there's loss on the bottom as well.

And in the end stage of the disease, in D, again, we see this kind of tunneling in a vision where there's a very, very small area through which the patient can see.

And usually that little remaining area, we call that a central island, that is the last to be lost in glaucoma. So obviously, this happens over time. Again, there are things we can do to intervene, whether it's medical treatments, surgical treatments, natural treatments, and we'll talk about all of those approaches later on in this series during this month of January.

Now, I wanted to also share with you that when we think about glaucoma, there are many types of glaucoma, but we usually categorize the many, many types into two major types.

There's open angle glaucoma and there's closed angle glaucoma. Open angle glaucoma is a type that tends to affect people as they get older, so more common in the elderly.

And it is initially treated with medications, whether that be eye drops or pills. And if a patient is not responding to the medications, meaning that their eye pressure is not well controlled, or if they continue to have progression of their disease, they may need to have a laser or a surgical procedure done.

Enclosed angle glaucoma. This is a little bit more aggressive, and sometimes it presents very acutely, like meaning overnight.

Open-Angle vs. Closed-Angle Glaucoma

Someone can have very serious signs and symptoms, and these patients, they definitely need some kind of treatment, whether that be emergency medications followed by an emergency laser or an emergency surgery.

So again, open angle and closed angle. Let me show you now what they look like on cross-section. So this on the left here is an example of what open angle glaucoma, the dynamics of open angle glaucoma.

So to orient you, here up above in blue or light purple, I guess, that's the cornea. That's the front of the eye. Here's the iris, which is here shown in pink, but most of our iris is either brown or blue or hazel or green.

And then here is the lens behind the iris. So the fluid produced by the eye is called the aqueous fluid, and it's to help to keep the shape of the eye.

The ciliary body here produces fluid. And the fluid goes, there's a flow to this fluid. It goes in front of the lens around the iris, and it drains out through the front part of the eye, which is called the trabecular meshwork.

Sorry for all the terms here, but I think that it's really important for people who have glaucoma or who are at risk for glaucoma to understand the terms, because your eye doctor may be sharing these terms with you.

And it's best if you have a baseline understanding of what parts of the eye these are. So the ciliary body, again, is in the back of the eye. By the lens, it produces the fluid, which comes around, drains through the trabecular meshwork just behind the cornea in the front part of the eye.

And in open-angle glaucoma, this system here is not a problem. The problem is in the trabecular meshwork. Somehow, there's some resistance to drainage, and the fluid pressure builds up.

Think about it like a sink. You have the faucet, which is producing the fluid, which is the trabecular meshwork. The sink is flowing water, and the drain of the sink is the trabecular meshwork.

And in open angle glaucoma, the drain is partially closed or clogged. And so the fluid builds up, just like if you had a sink where the drain is blocked, the liquid, whatever water is in there, would build up and build up, eventually overflow.

The eye can't really overflow. It just gets really, really hard, and the pressure goes up. So that's open angle glaucoma. Now, let's talk about closed angle or angle closure glaucoma, which is the picture on the right.

So it's the same system where the ciliary body or the faucet is producing aqueous fluid. It comes around and in case the lens in the eye is very thick, let's say there's a big cataract there and it's become very thick, it could actually block the flow of fluid around the iris.

and cause angle closure. And this is oftentimes when it's an emergency. When it happens very suddenly, the angle gets closed and the pressure goes sky high.

And it can cause a lot of symptoms that I'll show you and talk about in just a moment. The other type of angle closure glaucoma is if this drain here is blocked also.

So if the lens pushes up, it can push the iris up against the cornea and block the drain. So it's a different mechanism. Imagine that in the first type, meaning open angle glaucoma, the blockage is in the drain below and you can't really see it.

But in closed angle glaucoma, the blockage is right there at the drain. So imagine that you put a drain stopper right there. That's kind of what angle closure glaucoma would be like is if there was a drain stopper in your eye and it's blocking any fluid from exiting the eye.

And that's why the pressure goes up so quickly. It can rise very, very sharply up and cause a lot of symptoms, not to mention risk for vision loss. So I hope you understand this dynamic here with pressure and the two types of glaucoma.

Now let's talk a little bit about each type of glaucoma and who is at risk. So open angle glaucoma is sometimes also called primary open angle glaucoma.

That's the most common type. There are secondary types as well, which are less common, so we won't really touch upon them today. But primary open angle glaucoma is a silent thief of sight because it happens so slowly.

People lose a little little bit of their peripheral vision, a little bit more, a little bit more, a little bit more until it becomes very pronounced and noticeable.

And again, patients may not have symptoms for years or even decades in the earliest stages of primary open angle glaucoma. And this is why it's so dangerous because it can lead to blindness because it's so slow and so insidious.

Now, in terms of other risk factors, family history is a big risk factor. If there is a first degree relative with glaucoma, one's risk goes up significantly.

Or if it's a grandparent or aunt or uncle or cousin, the risk goes up as well.

Risk Factors for Different Types of Glaucoma

Nearsightedness or myopia is another risk factor for open angle glaucoma, as are some systemic conditions like high blood pressure, heart disease, diabetes.

Migraine is a risk factor for open angle glaucoma. And then there are medications that can cause increased risk for open-angle glaucoma like long-term steroid use.

And it doesn't have to be only oral steroids that are oftentimes used for autoimmune diseases. It can even be topical steroids. Let's say you're using a topical steroid cream for a long period of time or a steroid cream on your face.

That can increase one's risk of open-angle glaucoma. Or let's say it's a spray, let's say it's a steroid inhaler that some people may have to take for asthma, that can also cause or lead to open angle glaucoma or even steroid drops.

Sometimes people are prescribed steroid drops for other types of eye conditions like inflammation of the eye. And if used chronically, that can also lead to high eye pressure and potentially open angle glaucoma.

Now, I want to talk to you a little bit about differences in race and risk factors for glaucoma. So we know that people who are of certain races, for example, Black, Hispanic, have a higher risk for open angle glaucoma.

We don't know exactly why. Some of it's genetic. Perhaps it's something to do with the pigment inside the eye. increased pigmentation may somehow block the trabecular meshwork.

We're not exactly sure, but we know that in particular, people who are black have a three to four times higher risk for blindness from glaucoma. The prevalence is also higher in the general population in black individuals compared with white individuals.

For example, in the US, if you take people over the age of 70, if an individual is, their risk is about 10% that they may have open-angle glaucoma, versus if you take the same age group in white individuals, the risk is only 2%. Also, people who are black have a higher chance of glaucoma at an earlier age.

And I have to say that this is something I'm very concerned about in some of my patients who are even much younger than the average age for glaucoma. For example, I've seen people in their late 20s, 30s, 40s, 50s who are black who have already significant damage for glaucoma and also who may have a family history.

So it's really, really important. If you're listening to the podcast, if you are black or Hispanic, you have a family history, get checked out as soon as possible because this is a condition you do not want to miss, even if you're totally asymptomatic.

Also, people who are black have a more advanced stage of disease by the time they're diagnosed, and there are probably multiple factors that play into that as well.

Now, I mentioned earlier that most cases of glaucoma have high eye pressure. There are cases with normal pressure, and we call this normal tension glaucoma.

And there are some specific risk factors for normal tension glaucoma, like obstructive sleep apnea. So in all of my patients who have normal tension glaucoma, meaning pressures that are lower than 21, I typically ask them, number one, do you snore at night?

And number two, have you ever been tested for sleep apnea? And if the answer is yes and yes, great. Hopefully they've already been diagnosed. Hopefully they're on treatment.

If the answer is yes and no, meaning that they snore at night but they haven't been tested for sleep apnea, I

immediately send them for a sleep study to make sure that they don't have sleep apnea.

Because we know that when people have sleep apnea at night, not only do they snore, they stop breathing. And when they stop breathing, they get less oxygen to their tissues, including their optic nerves, and they're at risk for glaucoma.

So get it checked out. Now, people who don't know if they snore or not, we'll talk about this in episode four of this series about lifestyle, et cetera, factors.

But there are some things you can do to figure out whether you may have sleep apnea or not. And another risk factor for normal tension glaucoma is low blood pressure.

So not high blood pressure, as we've seen with open angle glaucoma, more so low blood pressure. And what do I mean by low blood pressure? I would say the top number, the systolic number being like 90 over 100 or less, and the bottom number being 60 or less.

And the thought is that when the blood pressure is low, there may not be enough oxygen and blood flow to our eyes, and that may predispose someone to having normal tension glaucoma.

All right, close angle glaucoma, what are the risk factors? Family history, again, also elderly, females are higher at risk than males, and also certain racial populations, for example, East Asians, some South Asian groups, Eskimos, because it's thought that these groups have smaller eyes, and the smaller one's eye, the more risk there is for angle closure.

Hydropia, or farsightedness, is a risk factor because of the same concept. People who are hyperopic may have shorter eyes, smaller eyes that may be at higher risk for myopia.

And then eye inflammation can cause scarring that can lead to angle closure, chronic angle closure. All right. Acute glaucoma typically has very, very unique symptoms, and you should be aware of what these symptoms are because if you have them, you need to go get care immediately.

Do not wait on it.

Acute Angle-Closure Symptoms and Emergency Care

Do not wait until the weekend's over, until Monday, or if it's late at night, don't wait until the next morning because every moment you're losing, if the pressure is high, you could be potentially risking your optic nerve health and have permanent vision loss.

Get it checked out, go to an emergency department, preferably one with an ophthalmologist on call, or go to your local eye hospital if you have one in your area.

But acute glaucoma typically presents with these symptoms. Severe ocular pain, redness, blurred vision, seeing halos around lights, headache, nausea, and vomiting.

And this is what somebody looks like. So the picture on the left is someone with acute angle closure glaucoma. And you can see the eye looks very angry.

inflamed because there's a lot of redness because the pressure is sky high. This individual's pressure was in the 60s and normal pressure is usually up into the 20s.

So this was like three times normal pressure. And again, it's extremely, extremely, extremely painful. So get it checked out. It is an eye emergency. Well, that is it for today's episode on the IQ Podcast.

I know I shared a wealth of information with you about the foundations for glaucoma. I hope you have been able to

understand a little bit more about this potentially blinding disease.

And I know it's a lot of information, so please, please, please go back, take a listen again, really understand what's going on, because this will set you up to understand what I'm really talking about in next week's episode, part two, which is testing for glaucoma.

So we're gonna be talking about all the various testing modalities we do from eye pressure to optic nerve exams, some of the visual field testing that I touched upon today.

It's going to be a really eye opening episode. So please, please, please don't miss it. And if you've enjoyed today's episode and if you're enjoying the IQ podcast, I highly recommend that you subscribe.

Episode Wrap-Up and Next Steps

So whenever new episodes are released, you'll get notified. And also, please, if you've enjoyed this, if you've learned something, share this with your family and friends because knowledge is empowerment when it comes to eye care.

And also, I always love to say this, an ounce of prevention is worth a pound of cure. So if you can prevent vision loss that may happen 10, 20 years down the road, why not start today?

You do not want to end up with losing your peripheral vision and having tunnel vision because you can do something. There are things you can do. So please, I encourage everyone.

Get it checked. Get a baseline eye exam. Get ruled out for glaucoma or get treated if you have early glaucoma. Get on the schedule. Pick the phone up after.

As soon as we finish today's podcast, as soon as you finish listening, pick up the phone, call your eye doctor, make that annual eye appointment. Well, again, thank you for tuning into the IQ Podcast.

Remember to subscribe, and I will see you all during next week's episode. So stay tuned and take care. Thank you for tuning in to the IQ Podcast. I hope you enjoyed today's episode and learned something new to help you boost your IQ.

Leave us a review and share the podcast with your family and friends. Stay connected with me for more eye-opening insights on eye health, nutrition, and lifestyle.

Until next time, keep your vision clear and your IQ sharp.