Macular Degeneration Part 2: Integrative Approaches Transcript

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Podcast Intro and AMD Series Overview

Studies have shown, and this is one study that was one of the milestone studies back in 1994 when it was published, showing that if you have enough of carotenoids, particularly lutein zeaxanthin in your diet, if you're in the top 20% of people who take or who eat lutein zeaxanthin, like the highest quintiles of intake of lutein zeaxanthin, you can cut down your risk of macular degeneration progression by 43%. 43%. incredible how powerful these nutrients are if you get them from diet.

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

Hello, and welcome to the IQ Podcast, where you can gain insights into your vision health, your brain health, and raise your IQ. I'm your host, Dr. Rani Banek, also known as America's Integrative Eye Doctor.

And this month in February, in honor of Macular Degeneration Awareness Month, I'm doing a multi-part series on AMD, a leading cause of blindness in the United States and around the world.

So last week, I talked about what macular degeneration is. I gave you some visuals of what it looks like in the back of the eye. And I talked about some of the risk factors for macular degeneration.

Today in part two of this series, I want to be talking about what are the root causes of macular degeneration. Now I'm putting on not my traditional ophthalmology hat, but my integrative functional medicine doctor hat when I'm talking about root causes of AMD.

And then I'm going to be talking about what you can do to fight against some of those root causes. So stay tuned for this week's episode on the IQ podcast.

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 iHealth 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.

Macular Degeneration Progression and Root Causes

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.

Okay, last week I had shown you some images of what macular degeneration's progression looks like. So we can start off, the top picture here is showing you a healthy retina.

And then the bottom left-hand side is showing you dry macular degeneration with those little drusen deposits or little pebbles or stones that are waste products that get deposited under the retina.

And then the bottom right shows you an advanced case of macular degeneration where the drusen have caused inflammation and have led to new blood vessels forming and bleeding underneath the retina that we call wet macular degeneration or neovascular macular degeneration, what I like to call leaky eye syndrome.

Again, putting on my integrative and functional medicine MD hat. So this is a process that does not happen overnight. It takes a long time for this to happen to get from a healthy eye to wet AMD or even advanced dry AMD, which is geographic atrophy, which is not shown here, but it doesn't happen overnight.

It can take years, probably takes decades in most people to go from a healthy retina to a diseased retina. which in a way is good because that gives us time.

It gives us a window of opportunity to intervene and start taking actions that can decrease our risk of progressing to advanced AMD. Now, in order to understand the preventative strategies, we first need to have a short discussion about what are the root causes of macular degeneration?

The way I like to think about this is basically, it's a set of dominoes that are falling. So the first domino falls, and then the next one, and the next one, and the next one.

And then that can lead to vision loss. Now luckily, neovascular macular degeneration is not that common. It's only about 10% of people who have AMD. And by the way, I didn't mention this earlier.

I should have. About 20 million people in the United States are estimated to have macular degeneration. Yes, 20 million. And that number keeps going. A few years ago, about five years ago, it was estimated to be 11 million.

And now in 2026, it is estimated to be 20 million. And my guess is that is probably a gross underestimate because a lot of people don't know that they have this condition.

A lot of people have not gone to see an eye doctor in quite some time. They have no symptoms. So they may not even know that they have early or intermediate stage AMD.

and it may be too late. And sometimes they progress and they don't even know that they had the earliest precursors of disease. So again, another plug to go see your eye doctor, get that eye exam.

But going back to root causes, so what's happening in the back of the eye to cause this series of processes to happen in the retina? Well, first of all, I think the very first dominant we really need to focus on is oxidative stress.

Yes, oxidative stress. Now, if you've heard the term but you don't quite understand what it means, basically, oxidative stress is what happens when it goes back to chemistry, thinking about an atom.

You have your nucleus and your protons and your neutrons and you have the electrons around the nucleus. So basically what happens with oxidative stress is that you have these other chemical compounds that form, they're called free radicals, and they're unstable.

And they want to steal electrons from stable atoms to stabilize themselves. And so what they do is they go and they steal an electron from a stable atom and then that destabilizes that stable atom.

And when it happens over and over again, if it happens unchecked, it can cause damage to organelles within cells. You know, the tiny little structures within cells are called organelles and one of them is mitochondria, which we'll talk about in a moment.

But it can cause damage to those subcellular structures and then eventually cause a cell not to function properly and then cause a cell to die. Usually it's programmed cell death or apoptosis.

So there's a sequence of dominoes falling there as well. But oxidative stress is usually the culprit for why this happens. Now, oxidative stress is part of our normal being.

It's part of our bodies. It's a normal byproduct of normal metabolic processes. So it's not all bad. But when there's too much oxidative stress and there are not enough antioxidants, and we'll talk about what those are in a moment, Antioxidants to balance out the oxidative stress and to fight against the free radicals, that's when damage can occur and that's when we call that oxidative damage.

Now, I mentioned free radicals, which are kind of unstable molecules and antioxidants. What are antioxidants? Antioxidants are molecules that tend to be very large and they have a lot of electrons to share.

They happen to have plenty of electrons that they don't mind giving away and to neutralize a free radical. And luckily because the antioxidant is usually such a big molecule anyway, when it gives its electron away, it doesn't destabilize itself, so it remains stable.

So that's the definition of an antioxidant, is a molecule that can donate an electron to neutralize a free radical and to limit oxidative stress. What are some examples of antioxidants?

Well, some vitamins are antioxidants. For example, vitamins A, vitamin C, vitamin E, these are all antioxidants. Also, minerals. There are some minerals that function as antioxidants as well.

For example, selenium is an antioxidant. And so these, and there are many others, our bodies also make antioxidants. Glutathione is a very potent antioxidant that our body manufactures from amino acids, and it is naturally able to fight against free radicals and neutralize oxidative stress.

So the first dominant of all in macular degeneration is oxidative stress. Usually in the retinal pigment epithelial cells, perhaps, we don't exactly know where it starts.

Maybe it starts there, maybe it starts in the retinal cells, but basically that's the first domino to fall. Then what happens is when there are high levels of oxidative stress, the cell cannot function properly.

And eventually, the mitochondria, which are the subcellular organelles that produce energy, they produce ATPs. If you think back to chemistry class and biology class, they produce ATPs that our bodies need to function.

So when there's too much oxidative stress, the mitochondria can get damaged. And actually, mitochondria are very prone to oxidative stress because when they manufacture energy, they release a lot of free radicals.

It's a byproduct of manufacturing ATPs and energy. There's a lot of free radicals that are released, so they are susceptible to oxidative stress. So unless there's enough antioxidants to neutralize things, mitochondria themselves can be damaged by the free radicals they're producing.

Or if there are free radicals just around in the environment, because the body is exposed to free radicals, and I'll give you some examples of what that can be in just a moment, that can also lead to damage of the mitochondria, and then the mitochondria can slowly degenerate and slowly die off.

And if the mitochondria die off, then the cell doesn't function properly. And ultimately, if there are enough mitochondria in a cell that are not functioning properly, the cell will die.

And so that's the second domino to fall, oxidative stress, mitochondrial dysfunction, and ultimately mitochondrial death. And then the third domino to fall in macular degeneration is inflammation.

UV Protection and Sun Damage Prevention

So as this process is going on, it can trigger an inflammatory cascade. So the immune system gets involved. So let's say underneath the retina, the retinal pigment epithelial cells that normally manufacture or they don't manufacture, they collect waste and then they dispose of it.

So they're like the garbage collectors of the retina. If they're undergoing a lot of oxidative stress and their

mitochondria are not working properly, they can't clear waste products properly, neutralize the waste products.

And then these drusen deposits start to form. Then once the drusen deposits form underneath the retina, then there's inflammation that comes in. The body releases, the retina actually, the tissues around the retina release pro-inflammatory mediators, molecules that then trigger inflammation.

And then the last stage of this cascade, the last domino to fall is if there's enough inflammation, Sometimes the retina doesn't get enough oxygen and then new blood vessels form.

So there's a particular modulator called vascular endothelial growth factor or VEGF is what we call it. And that gets released to create new blood vessels.

If you remember back to what I said in the last episode, when I was talking about new blood vessels in macular degeneration, which are not healthy blood vessels, these blood vessels are very small and fragile.

These tiny little blood vessels, they bleed, they break. And when they bleed, that can lead to bleeding underneath the retina, leading to wet transformation of dry macular degeneration just with drusen and inflammation into wet macular degeneration.

That is the cycle of what happens in terms of if you're thinking about this from a root cause perspective, oxidative stress, mitochondrial dysfunction, inflammation, and then unhealthy blood vessels forming.

Okay, there's four dominoes that are falling at a cellular and biochemical level. So how can we fight against this? Well, luckily, I have some really important ways, strategies I'm going to share with you that have been shown in clinical studies to be very, very effective in fighting macular degeneration.

So let's get right into it. Number one, we know that when eyes are exposed to light, various different wavelengths of light, our retinas process light energy, and then send that signal to the brain.

But UV light that comes from the sun, UVA and UVB light that comes from the sun is very powerful. And it's so powerful that it can cause a lot of oxidative stress to our retinal photoreceptors and presumably the retinal pigment epithelial cells as well.

So that's why UV protection is so important for macular degeneration. I know that a lot of people are influencers you may hear on social media talking about getting enough sunlight into our eyes and not wearing UV protection because they're hormone disruptors.

There is no proof of that. If you wear sunglasses, you are not disrupting your hormones. Your body still knows what time of day it is. It's still secreting melanin when it gets dark at night.

So I really want to debunk those myths about sun gazing and not wearing UV protection because The flip side is you may damage your retinal cells irreversibly and lose vision.

So it's so, so important to wear UV protection. And the type you should get are UVA, UVB blocking glasses, 100% UVA, UVB. You look for a little sticker on the sunglass that says that, or the alternative is UV400, which is again, another little sticker that designates that the tint on the lens is blocking any wavelengths that are shorter than 400 nanometers, which is in the UV range.

So get those sunglasses, please, please, please wear them. In terms of style, the bigger the area of coverage, the better because you also want to block the rays that may be coming in from the sides.

So I recommend, I know it's a little bit old fashioned, but the large Jackie O style sunglasses that wrap around. So that's what I would suggest. And so think about that.

Interestingly, the tint doesn't matter. So a lot of people think, oh, if you get really deeply tinted glasses like black or

brown or deep gray, that's better.

But it's just as long as it has a little sticker on it that says UV 400 or 100% UVA UVB blocking, that should be doing the job. So the color doesn't matter.

It could be blue. It could be pink. It could be yellow, whatever color you prefer. But make sure it's UV blocking. Next. I always tell my patients, wear a wide brimmed hat in addition to the sunglasses.

Because again, sunlight can get in from the sides, but it can also get in from the top. So it's protecting your eyes against not just macular degeneration, but against eyelid cancers and other kinds of sun related damage on the surface of the eye.

So, so, so important. Wear your UV protection and a wide brimmed hat. Sun gazing, I said earlier, it's a no-no. Our bodies know what time of day it is.

If we're exposed to sun on our skin, our bodies will know what time of day it is. You don't necessarily need to be staring at the sun. It can do a lot of harm.

It can do a lot of damage. You can cause thermal burns in your retina called solar retinopathy. So please don't do this. Please don't listen to those influencers.

By the way, most of them are not eye doctors. They're not even close to being eye doctors, yet they're talking about sun gazing for your eyes. It's really a travesty.

Please, please, please don't risk it. This is just a graphic that I made showing the various different types of sun damage that can happen from sun gazing.

So burns on the surface of the eye, retinal burn, solar retinopathy with permanent loss of central vision. Benign growths on the surface of the eye or even tumors of the eye or the eyelid, like melanoma, can happen from too much UV exposure.

So please, please, please be cautious. Cataracts. That's another thing. I didn't mention it here on the list, but it's shown down below. Cataracts can be a side effect of too much sun exposure.

Next, oxidative stress. Perhaps one of the highest levels of oxidative stress that the body is exposed to is from inhaled toxins, including cigarette smoke.

And we know from twin studies that smoking doubles the risk of macular degeneration and vision loss. So please do not smoke. As a corollary to that, even fumes, whether it be forest fire fumes or barbecue fumes or cooking fumes, Please, please, please be aware and try to protect yourself from those types of fumes and make sure you have adequate ventilation.

Get an air filter for your home.

Carotenoids, Omega-3s, and Eye Nutrition

If there's a lot of air pollution outside, keep your windows closed. And again, please smoking cessation is key for macular degeneration management. Now let's talk a little bit about nutrition.

So we're talking about oxidative stress, antioxidants. I mentioned a couple of vitamin antioxidants earlier, but there are specific antioxidants that are designed for your eyes, which come from nature.

They're called the macular carotenoids. or xanthophyll carotenoids, because they're yellow in pigment, and xanthophyll means yellow. These carotenoids are relatives to beta-carotene or vitamin A that give the beautiful color to carrots, for example.

But these are slightly different. There's three of them. They're called lutein, zeaxanthin, mesozeaxanthin. And they get deposited, so our bodies can't make these carotenoids.

We have to get them externally, either from foods or from supplementation. Take in these carotenoids, your body absorbs them and selectively deposits them right into the macula in a bullseye configuration to protect the macula.

Remember from last episode on the IQ podcast, I was showing you images of how the retina is organized in a bullseye type pattern with the center of the retina, the foveola, fovea being responsible for 2020 vision.

Well, these carotenoids are also distributed in a bull's-eye pattern. So on the outermost zone is lutein, the middle zone is zeaxanthin, and the inside zone, the area that's most important for your central 2020 vision, is mesozeaxanthin.

And so these three carotenoids, they are our natural shields against macular degeneration, our natural UV blockers, because again, they're antioxidants, they help to neutralize UV light.

Still, you should still wear your sunglasses, even if you have enough of these macular carotenoids. But they also help to neutralize blue light that's coming from your screen that can sometimes lead to eye strain and light sensitivity.

So these macular carotenoids are very, very important. And studies have shown, and this is one study that was one of the milestone studies back in 1994 when it was published, showing that if you have enough of carotenoids, particularly lutein zeaxanthin in your diet.

If you're in the top 20% of people who take or who eat lutein zeaxanthin, like the highest quintile of intake of lutein zeaxanthin, you can cut down your risk of macular degeneration progression by 43%. 43%. incredible how powerful these nutrients are if you get them from diet.

Now, the other nutrients that were looked at in the study like vitamins A, C, and E, and not as protective, but definitely lutein and zeaxanthin, they took the award here for the most potent antioxidant for your eyes against macular degeneration.

So how much do you need? Well, most people, adults need about 10 milligrams a day of lutein. Some studies will quote 6.5 to 20, but the average is about 10 milligrams a day.

Unfortunately, most people, especially those on a Western style diet are only getting one to two milligrams a day. So we need to close that gap between what we need and what we're getting.

We need to close that gap. So we need to increase our intake through diet or take a supplement. For zeaxanthin, our eyes need about one to two milligrams a day.

Unfortunately, most of us get less than one milligram a day. So again, we need to close that gap. For mesozeaxanthin, now this is interesting because meso is not commonly found in foods.

You can find it in some fish, like the skin of fish like trout, for example, but seriously, how much fish skin are you going to be eating on a daily basis?

Probably not enough to get you the meso that you need. So interestingly the body is able to convert lutein into mesozeosanthin and that's how we think we get the meso that is right there at the very center to protect our fovea and foveola.

So even more reason to have enough lutein in your diet because a lot of it will not just protect that outer ring within the macula but it will also be converted into mesozeosanthin that will protect your central vision.

What are some great sources of lutein and zeaxanthin? Well, dark green leafy vegetables take the prize here. Kale,

by far the highest concentration of almost any food, actually the highest concentration, so kale is king.

Also arugula, spinach, broccoli, Swiss chard, rainbow chard, mustard greens, dandelion greens, romaine lettuce, collard greens, bok choy. You see a pattern here.

Dark green leafy vegetables are rich in lutein and zeaxanthin. I typically recommend three to five cups a day. I'm not kidding. Three to five cups a day is what you need to keep your eyes healthy to get into that top quintile of intake.

It's top quintile. Think about that. Other foods, if you can't have leafy greens, if you don't like the taste or you can't digest them properly, or if you have an oxalate sensitivity, you can have yellow and orange bell peppers.

The green ones don't have much lutein and zeaxanthin, if any, but the orange and yellow ones have very high concentrations. Egg yolk is a wonderful source.

Don't throw away the egg yolk. Eat that beautiful orange yellow color of the egg, egg yolk, because that's where the magic is. Lutein and zeaxanthin is found in high concentrations in egg yolk, corn, By the way, the scientific name for corn is zea maize, and that's where the word zeaxanthin came from.

And then some spices like paprika and cayenne pepper are also good sources. Other ways to protect against oxidative stress, protect your retinal photoreceptors, is making sure you're getting enough omega-3s.

So studies have shown that people who have higher levels of omega-3s, DHA, EPA, have lowered risk of macular degeneration and vision loss. So DHA, by the way, is the highest concentration of DHA in the body.

Dacosahexaenoic acid is DHA. Try saying that five times. That's really a tongue twister. But basically, the highest concentration is actually in the retina, in our retinal photoreceptors.

And the photoreceptors are working hard. They're constantly renewing their cell membranes, and that's where DHA is located. So we need a constant supply of DHA to fuel regeneration of our retinal photoreceptors.

And these are just some of the foods that are rich in DHA as well as EPA.

Photobiomodulation and Lifestyle Strategies

And besides eye benefits, the omegas will also benefit your heart health, your brain health, your mental health, and it's been also shown to help with migraine as well.

So it's all around a wonderful nutrient to include. and they're anti-inflammatory. I forgot to tell you that. Omegas are very anti-inflammatory. So it's hitting one of the root causes.

It's attacking one of the root causes. This class of omegas, omega-3s. All right. Now, what can you do for mitochondrial function to support your mitochondria?

Now, this is really cutting edge. And this is light therapy, photobiomodulation. A lot of people may already be using photobiomodulation, red and infrared light therapy, maybe for skin health, for joint health, muscle health, anti-aging, mood stabilization.

But photobiomodulation is the scientific term for red and infrared and other colored light therapy. And so The first study to really look at this for retinal health and macular degeneration was published back in 2020. And it looked at using light in the range of 670 nanometers, which is red.

You can check it out. It's a free article you can get online. The very first study to show the potential benefits of PBM or photobiomodulation for macular degeneration.

Since then, we've had quite a few studies. The light site trials that looked at the benefits of red and infrared light therapy along with yellow light.

The wavelengths used in these studies were red light, 660 to 670 nanometers, infrared light, 850 to 860 nanometers, and yellow light, 590 nanometers. Now, why are these particular wavelengths chosen?

It's because the red and infrared has been shown to support mitochondria and stimulate mitochondrial biogenesis. So you're supporting your mitochondria, you're increasing their number, their concentration in cells, so there's better energy production.

Yellow light stimulates nitric oxide pathways and nitric oxide is important for healthy blood flow. Not the abnormal blood vessels I was talking about with VEGF and new blood vessels forming in new vascular AMD, but healthy blood flow.

And so that's why this combination of yellow, red, and infrared light were studied. And this has actually now been studied in three trials. It's extremely safe.

And it is now FDA approved for dry macular degeneration. Yes, it is FDA approved. I know that I've talked to some of my colleagues about this who are retina specialists.

Some are very cautious about it, and others are very, very eager to get on that train and start treating their patients. It is not commercially available, meaning you can't just go online and go get a device that you can use at home, but you can seek out a retina specialist who can offer this to you in the office.

It's a series of nine treatments over three to four weeks. It doesn't take very long. There's really no downtime and it's alternating. So there's different wavelengths of light that are delivered to the eyes.

Some parts of the sequence are with eyes open and some parts with eyelids closed because that light can still get through your eyelids. But this light is incredible.

I really think this is going to be the wave of the future. Light therapy has been shown to decrease drusen volume, meaning actually make those drusen shrink and become smaller.

And this is really key, improve visual acuity and contrast sensitivity in dry macular degeneration. So this is scientifically proven. Unfortunately, you have to go see a retina doctor to get the FDA approved therapy.

Now, as an integrative doctor, what I do, then I'm going to share with you what I do at home because I don't have one of these. fancy machines at home.

I do have it in my institution that we do have it there, but I don't have one at home. So I've been using a commercially available red light, red and infrared light therapy panel.

And there's a particular one that I use that has the correct wavelengths. And if you're interested in that, I will include those links within the show notes.

But that is something that I use. And by the way, when you use it, if you wanted to try this again, this is completely off-label. The home devices have not been scientifically studied for macular degeneration.

This is an extrapolation of what the data has shown. And again, this is what I use at home. But when you do it, you need to be safe when you do it. And the best way to be safe is position the device 12 to 14 inches away from your face and do it for 2 to 3 minutes, 3 to 4 days a week.

Actually, let's simplify it. Let's do 3 minutes, 3 times a week. That's it. That's all you need. 12 to 14 inches, 3 minutes, 3 times a week. Eyes closed.

So important. By the way, because your whole face is getting exposed to the light, it also may have some anti-aging benefits for your skin as well on your face.

But this is how, as an integrative ophthalmologist, I address macular degeneration. Now, this is general advice. I'm not treating anyone through this podcast, but I'm just sharing with you some of the strategies that I've used in my patients, some of the strategies I use myself.

for my daily practices. So nutrition, we'll talk about supplementation next time actually. So I'll devote a whole episode to supplementation, but nutrition, light therapy, and I didn't mention this earlier, but movement is also really important.

Activity has been shown to help reduce the risk of macular degeneration progression as well. So please If you're sitting there, you have a sedentary lifestyle, get up, walk around a little bit, take the stairs, do some deep breathing, some gentle stretches, some chair yoga, get moving.

Because the more active you are, you know, whatever way you feel you can be active, everyone's different in terms of their capability to be active and what the types of activities that they enjoy.

Even walking can make a big difference. So get out there and walk.

Closing Remarks and Next Episode Preview

breathe, stretch, swim, run, jog, whatever you like, pickleball, for example. So I know some people are really into that, but get moving and that will do your eyes good and your body good as well.

So those are the various different ways that you can address the root causes of macular degeneration. Again, oxidative stress through diet, proper diet and dietary antioxidants.

In red and infrared light therapy for mitochondrial support. and then omegas for their anti-inflammatory benefits. You can also do curcumin, by the way.

And if you haven't yet, I know I talk a lot about diet in my education and my podcast and my social media. But if you wanted to learn more about the foods that are important for your eyes, whether it be macular degeneration or dry eye or glaucoma, Please check out my book, Beyond Carrots, Best Foods for Eye Health, A to Z.

You'll learn a lot and you'll learn also about the diversity of foods and why they're important and how you can incorporate them. I have some great recipes in the book as well.

So please, please check those out. All right, so with that, that concludes part two of my series on integrative strategies for macular degeneration in honor of Macular Degeneration Awareness Month.

I hope you found this episode helpful. I hope you're coming away with some really key strategies you can start implementing in your daily life. And if you've enjoyed it, please leave us a review.

Please subscribe and share this with your family and friends so they can also be empowered to protect their eye health. And I look forward to seeing you all next time in the final episode of this series when I'm going to be talking about supplementation.

Everyone's big question, like, what supplement should I take? What do I need to take for macular degeneration? So I'm going to give you some tips when it comes to choosing the right supplement for you.

All right. So take care in the meantime, and I'll see you all next week on the IQ Podcast. 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.