Introduction and hypertension overview

Welcome back. And today, I'm very honored to have Dr. Kim Williams, who is the past president of the American College of Cardiology and the current chairman of medicine at the University of Louisville.

And if ever there's an expert that I would trust regarding anything cardiovascular, it's Dr. Kim Williams. So Thank you, Dr. Williams, for joining us today.

Thank you so much for having me again, Dr. Marbas. Absolutely. So funny for you to call me Dr. Marbas That's. But we'll jump right in. And today we really want to highlight for you.

If you can help us understand what happens when there's uncontrolled hypertension, because so many times there's not symptoms. But if maybe you can just give us some insight on what that would be and maybe just start with how does prolonged high blood pressure kind of physiologically damage the body's organs and systems over time, would you say.

Now just introduce it with sort of an important statement of of why you're asking this and what the impact is. If you look at the leading causes of death around the country, around the world, and it's food, nutrition that outranks everything else.

But if you don't do lifestyle and you look at disease states, it's hypertension. It's over 70% of all Medicare. Medicare beneficiaries, the expenditures.

This is a serious disease with serious impacts. And it doesn't just kill people, it disables them. And so people end up on with hypertensive nephrosclerosis, that's meaning that they lose their kidneys or a hypertensive stroke or hypertensive heart failure.

And all the aneurysms and peripheral artery disease. Every every blood vessel disease is accelerated. You the blood pressure. Just think about it for a moment.

What the what happens to the heart? You know, if you look at your weightlifters, all the muscle gets really thick. And, you know, it's the you know, Arnold Schwarzenegger can win the Mr.

Universe contest. But if you're heart muscle, skeletal muscle, if your heart muscle goes against a weight, every beat and the blood pressure is greater than 130.

Okay. It actually does get thick. It does get muscular. The problem is that the heart isn't designed for that and it will ultimately outstrip its blood supply set, letting you leading the patient up for rhythm disturbances that can be fatal and that thickening of the heart makes the heart stiff.

How high blood pressure damages the brain and kidneys

So people will get short of breath when they try to walk around. Okay. So called diastolic dysfunction or heart failure with preserved ejection fraction because it's not a squeezing problem.

It's a relaxation problem. Squeeze, find, relax, slow. And so the pressure backs up into the left atrium and then that ends up in the lungs. And people do not feel good trying to exercise.

Well, if you put all of the complications, kidney, brain, heart together, this is a devastating disease. And if I could get everyone to do one thing, it would be a whole food plant based diet. Why?

You know, we used to think, based on a lot of trial evidence, that this was all about sodium and there are some sodium sensitive populations and perhaps African-Americans are more than others.

Sodium sensitive and respond to diuretics that way. But it's more than that. It's the fact that when you eat a whole food plant based diet, you're actually going to ingest fiber.

That fiber gets fermented in your in your gut by promoting good bacteria, which then ferment the ferment the fiber and set you up for a larger degree of bloodstream, short chain fatty acids, that's acetate appropriate butyrate.

Nobody wants the chemical names, but the fact of the matter is, those are really good for blood vessels. And if you had bad bacteria like I know there are still some, despite everything that you and I have done, there are still people out there with dead bodies in their refrigerator, and then they take those dead bodies out and actually consume them.

And when you're eating decaying flesh, you're actually changing your own microbiome. That is the the the bacteria in your GI tract. And we actually now have if anyone can search this out, go to your search engine, put in hypertension, microbiome, and you'll see all this literature pop up about which species Klebsiella, for example, that when it's in your in your GI tract, in large numbers, it contributes to blood pressure elevation.

And then there's some other species, Bacteroides in particular, that when you have a lot of those units, it actually lowers your blood pressure. Now, it just so happens that that's true of almost all the cardiac risk factors diabetes, obesity, the high cholesterol, all of them are really improved and inflammation.

I don't want to leave that one out. All of them are really improved by changing your microbiome. Okay. Yeah, that answers a lot of questions. And so what, no, it's fantastic.

You are a wealth of information. So anytime I've ever had you on interviews or spoke to you, it's it's beyond my expectations. But can we get to what happens with uncontrolled hypertension, which you kind of mentioned with the heart excuse me at the heart in the backup, but is there anything else, you know, like besides the kidneys?

You kind of mentioned it briefly, other organs that we should be aware of, the brain, for example, like what's happening. Exactly. So let's well, let's talk about them one at a time.

Okay. In the brain, the the most common finding that if you were to do an MRI study or CT studies, you'd find in the report chronic vascular disease, meaning small blood vessels.

What they're really pointing out is that they're little pieces of the brain that gets damaged when you're when you're blood pressure is not controlled and you'll get tiny little hemorrhages, so called lacunar infarcts.

It's a part of the brain and people will lose their memory and they'll lose their cognitive function and have a higher incidence of dementia. And they're willing losing their life to losing their personality and their ability to get around and do things and be live independently.

It has so many issues. Then on top of that, then there's strokes and these are catastrophic, the catastrophic events. And people will think that, oh, they just bleed into their brain or they create aneurysms. And the aneurysms bleed weakness in the wall because the blood pressure has destroyed the blood vessels of the brain.

Well, it's a little bit more than that. You can actually promote more plaque in the brain and then the blood pressure can actually break a plaque. And when that plaque breaks off, whether it's from the carotid or any way all the way up, you'll end up showering plaque material into small blood vessels.

And the tiniest, tiniest clot can stop you if it's in the wrong location, can stop you from speaking or stop you from moving. And hopefully with rehabilitation, change in diet, control, the blood pressure, you can actually get better.

But the biggest risk factor for stroke is actually having had a prior stroke. That's because most people are not

changing their lifestyle. They're, you know, they're not doing the things that would stop them from being in that position again.

So that's the brain, the kidneys. Major issue for cardiology, believe it or not, because once the kidneys start to go bad, they can't excrete the poisons that make plaque happen in your coronary arteries and you can't excrete enough fluid if you're in end stage renal disease without dialysis is you can't get enough fluid off to lower the blood pressure.

And so the it's like the kidney is the thing that keeps everything going so that the heart can do its job. And so you see a lot of people with chronic kidney disease that don't understand.

And the and it's really beyond understanding based on the current literature that says that the vast majority of our chronic kidney disease is produced by the consumption of animal protein, and that plant based protein will improve your kidney function.

And it's more than just that old thing of, oh, your creatinine, the measure of your kidney function improves because you stopped eating creatine when you stopped eating animals.

It's more than that. And so we need to do more sophisticated tests such as Cystatin C so that people can actually see. Yeah, I went vegan and my kidneys really did get better.

Not just the number getting better, but either way, what you see with chronic kidney disease is this terrible slow progression and rise they end up on and end stage kidney disease.

You go from stage one to 2 to 3 to 4 to 5, and then you're on dialysis for as long as you can survive dialysis. Well, that doesn't have to happen. And you have this isn't just our International Journal of Disease Reversal and Prevention saying this, although we do have articles to that effect, we're talking National Kidney Foundation Journal Nephrology.

These are mainstream journals begging people to stop overloading the kidneys with the acid load that comes from animal protein. And so I'm hoping that anyone who has any hint or know someone or knows a nephrologist going to point out to them that a whole food plant based diet can be not just life saving, but dialysis saving.

Kidney saving. Okay. Okay. So you ready for the heart? Okay. Yes. So the interesting part about the heart is that it's made up of a bunch of stuff.

Heart complications from uncontrolled hypertension

So you have I always liken it to a house to try to explain it to people. If they haven't taken gross anatomy and say, well, you're, you know, your your heart is kind of like your home is got doors.

That would be the vows. Okay. It doesn't have any windows, I hope. But some people do have windows in between the rooms and that would be congenital heart disease, having a ventricular septal defect or Peyton Freeman Valley, which is actually pretty common in the in the atrium.

And, you know, a clot in your toe could end up on your brain if your window isn't closed. But then you have a plumbing system that's your coronary arteries that feeds the the oxygen to all of the muscles.

And then you have your your electrical system. And that is the rhythm generation. But then you have the walls of the heart and they get real, can get really thick.

And you have and those doors can deteriorate over time and not close. Well or not open well. Well, it turns out that hypertension, high blood pressure or hypertension can ruin pretty much all of those things.

How do you how in the world does it ruin an electrical system by making the muscles so thick that all the electrical

activity cannot do a coordinated fashion?

And you look on an electrocardiogram and you see so-called intra ventricular conduction delay. Well, that if your muscle isn't beating a beating all at the same time, then it's not all relaxing at the same time.

Which means that you can set up rhythm disturbances. Okay, then how about the doors? If the blood pressure is really high, it tends to really affect the aortic valve.

That's the main valve that goes out to the body and it also affects the aorta. That is where that valve is leading the blood to, to distribute blood to the entire body.

And you end up with aortic dilation, and that would be enlargement. Well, and if you're really fortunate that, you know, that gets caught and you get on blood pressure medicine and it can actually regress if you're not so fortunate, you can get what's called a dissection where that aorta actually tapers.

And so that usually is catastrophic. Catastrophic. Very painful. Very difficult to manage. I do have a patient who survived their dissection because they happened to be in the emergency room about something else when it happened. Wow.

So that's yeah, that's to say it's not all that survivable when it happens, but some people have a chronic dissection, but the acute ones are very, very tough.

Okay. So so that's the that's the valves, that's the aorta. But how about the muscle itself? As I mentioned, if that gets really thick at candidate, the blood supply, that is, the pipes can't feed in enough blood to to stop, to keep the muscle healthy.

You end up with scar tissue. Scar tissue results in truly more rhythm disturbances. And so we go back to Framingham back in the seventies, and Daniel de Savage, one of the first academic African-American cardiologists.

His big contribution before he had a premature death was the identification that so-called left ventricular hypertrophy or thickness of the of the of the main pumping chamber.

The left ventricle is a huge risk for sudden cardiac death. And so the blood pressure does promote sort of with shear forces, more plaque generation in the coronary arteries.

And so if you add all that together, you have a situation where that overload can ruin the blood vessels, ruin the electrical system, ruin the anatomy, the valves themselves, the muscles start deteriorate.

Thickening is only the beginning. Ultimately, the heart would start to dilate, okay? And you'd end up meaning enlarge. And so you end up with heart failure that is reduced pumping as well as the poor relaxation.

So I know that's a lot to take in, but you basically everything that the heart is supposed to do can be ruined by uncontrolled high blood pressure. So then what about some other thing?

Is there anything else like fatigue or mood or sexual function, vision, anything else there that can be affected by the hypertension? So those are good points.

That is, the sexual function tends to deteriorate as you develop more plaque. But there also, you know, the fact that there are some medications, diuretics in high doses can impair sexual function in men.

Beta blockers don't they have a bad reputation for not being good for blood pressure anyway, but they're fourth or fifth line, but people still use them on occasion.

If they're on other drugs, maybe that's okay. The beta blockers tend to lower the libido rather than causing erectile

dysfunction, for example. So this so a rumor mill that blood pressure medications can ruin sexual function is sort of true and not true.

When you talk about the eyes. Yeah, there is such a thing as hypertensive retinopathy and I had family members that uncontrolled hypertension end up blind and so hemorrhaging into the back of your eyeball is is a risk.

It doesn't happen very often. I'm sorry it happens a lot, but it's usually not catastrophic occasionally. It really is. So look at so many organs. They're all depending on good blood flow and good blood vessels and they are they all can basically be ruined by, by blood pressure that's not controlled. Mm.

Well I one more question about the uncontrolled blood pressure. What are there any physical warning signs that maybe someone should be aware of because maybe someone doesn't go to the doctor very often?

But is there anything that they should be mindful of physically or the thing like, maybe I need to go get my blood pressure checked to be seen? So the interesting part is people sort of a lay population, they'll tell you, Oh, I know, my blood pressure is elevated because I got a headache that's actually accurate in a tiny number of people.

It's usually they call it the silent killer for a reason because people don't know their blood pressure. They don't realize it's elevated until something happens.

So what happens? The fatigue is probably not as common as the shortness of breath, feeling like you can't get air when you're trying to exercise or trying to go up a flight of stairs with carrying groceries.

And that has to do with so-called the diastolic dysfunction or heart failure with do with preserved ejection fraction from the thickness of the heart.

So people unfortunately, if you wait for symptoms, something has happened already, something not good and all of your blood vessels are at risk. So we would actually have recommend it used to be like simple seven.

Now it's like the essential eight where everyone should be monitoring their blood pressure, not just in the office but at home. Why? Because office pressures can be inaccurate.

They can be an overestimate of what the real pressure is. And unfortunately, in some populations it could be an underestimate so called mass hypertension of what's really going on at home.

If there's life, life issues at home. So know what your blood pressure is. Get your blood sugar checked, get your cholesterol checked. Make sure that you're maintaining an ideal body weight.

No smoking, exercising and making certain that you're getting enough sleep as well as doing drumroll a whole food plant based diet. So that would be, you know, life's essential eight.

Symptoms, warning signs, and blood pressure monitoring

So Dr. Williams, we kind of just spoke to Life's Essential eight. So let's talk about, you know, when someone is on hypertensive medications, like what does that look like?

How do they get started? And then when these hypertension medications aren't working, can we speak to a little bit more about what's so special about a plant based diet or other lifestyle interventions that might be helpful in treatment?

So so why don't we start there, so-called resistant hypertension? I'm convinced after 44 years of of academic medicine, that there probably is no such thing.

There was some hints at that in that there are a handful of randomized trials about renal denervation catheters where you could actually go up into the veins that drain the kidneys and burn with radio frequency, the nerves, and

is supposed to tell the kidneys to stop sending out anything and any of the hormones that raise the blood pressure.

And the interesting thing is that the procedure does work, but it never gets it never has. The big impact because the control group and ends up having good blood or blood pressure control because they're going to a doctor for the study is hilarious.

And so you end up with this minor difference in so called resistant hypertension were defined as you know someone having an elevated blood pressure that won't go down on three different drugs.

Well, if everybody is that inherent, they actually do pretty well. But in the beginning of our what you mentioned is probably the most important thing that we could learn about blood pressure.

And it is embedded in our 2017 American College of Cardiology hypertension guidelines, and that is lifestyle. We should drop our sodium increase our potassium, decrease the saturated fat and cholesterol in the diet.

We actually try to exercise on a daily basis trying to get up between 150 and 300 minutes a week of dynamic exercise, cutting the amount of alcohol completely, if you can, and approaching an ideal body weight lifestyle really does make a difference.

And if you add up all of those things that I just mentioned, the literature for each one of them would be five or ten millimeters of mercury. You put them all together, you're talking about 45, 50, 60 millimeters of mercury.

And who needs medication? Who will make the lifestyle changes? But good news is we do have good medications. And so how it starts is that someone will go to a doctor or go to an emergency room for, you know, because they hurt their ankle or something and find that the blood pressure is elevated, get referred in.

If the blood pressure is more than 180, they should be starting drugs right away, even if it's a pain response. You could argue about the one sixties, but ultimately people are going to be followed up.

The most important thing of that follow up is to immediately go and get a blood pressure cuff and measure it every day. And if it's still markedly elevated, call somebody right away.

Don't wait the week or the two weeks that it takes to get you in. But ultimately, the our recommendation would be to always measure your blood pressure before you take your pills.

You know, you have the coded you got to get a new variant and you might not even feel that you had a fever. It might feel just like a cold or anything like that.

But actually you got dehydrated and your blood pressure's 90 over 50, and then you're taking your blood pressure pills now, you know? And so I'm always and but the other side is way more common.

And that is the medications are being taken, the lifestyle is not optimized, and the blood pressure medications do not have you anywhere near your target.

And that case, you do take your Patel's and you call the doctor and say, hey, my blood pressure is 160. I know you told me it should be less than 130.

And notice I'm only talking about systolic pressure we kind of gave up on diastolic because it wasn't so helpful.

Treatment, lifestyle changes, and plant-based diet benefits

So that's really what it looks like. Start with on blood pressures, write them down, send them to your doctor. Everybody's got a by law, they have to have a portal with their with their electronic health record these days.

And so the free communication of a lot of numbers is the thing that's going to get you under control. So just to

speak to let's say someone was hypertensive was is on medications and they start a whole food plant based diet.

They start exercising and utilizing all the lifestyle components that you've mentioned. How long does it take to see improvement? And what about those who don't see an improvement?

Is there something special or something that we need to be focused on more? And maybe is it what is considered an ideal weight? Maybe it's something like that, but what is your recommendations there?

So there are people who do not respond and sometimes they have a so-called secondary cause, such as renal artery stenosis. It's a fancy term for the the blood vessel that feeds the kidneys, having plaque or so fibro muscular dysplasia, which is sort of a the artery wall has muscle that that muscle overgrowth, it can create a narrowing.

So the blood pressure in the kidney might be 70 and the blood pressure in the body because the kidney puts out hormones to raise the blood pressure. So because it thinks it's going to die and think the patients are going to die, the blood pressure is 170.

And so the kidney is trying to preserve itself and preserve the body, not realizing that on the other side of that, narrowing the blood pressure is extremely high.

So you do have some resistant conditions that are so called secondary hypertension, and there are a handful of them elevated cortisol, elevated catecholamines, so called field chroma stoma.

But the vast majority of our secondary workouts are negative. And I've been, like I mentioned, that really mission in doing academic cardiology for 44 years.

I've seen like four of them. And, you know, you cut out the adrenal tumor and things get better. So there are there are conditions, but most of the time people are going to respond because it's so-called essential hypertension.

It's mostly diet, overweight and lack of exercise. So we fixed the lifestyle. But I think what you're getting at is, you know, how effective can it be in some are going to be?

You know, like I mentioned, it might be 45 or 50 millimeters of mercury off of someone who's really hypertensive, who does everything the right way. Hmm.

So are there any particular foods that you like to emphasize over others on the whole, the plant based diet? So, you know, I, I would have to say after reading about in our journal Arugula Rocket, I never really liked the taste of it much, but I like it a lot more now that I know that the nitric oxide and vasodilatory capacity of it is really good.

But I have to tell you personally, you know, being African-American and having a stressful transition from being this good, I say this out loud at University of Chicago in college, I was playing so much tennis and I was study on the side medical school.

You can't you can't play your way through medical school at University of Chicago. And so I had this, you know, probably somewhere around an act coupling of my academic time.

How much time I was sitting and reading and studying. And the tennis was not 6 hours a day. It was like one hour a week. And under that kind of pressure, with a family history of hypertension pretty much coming and going and everybody I had a blood pressure, 140 over 90 and I was already so a vegetarian.

But I was doing that, you know, over lacto kind of vegetarian diet. Well, I would made a specific choice based on my physiology books to actually cut the sodium.

It had a dramatic effect. You my blood pressure. 125 fast forward about goodness 20-25 years when I learned about my cholesterol being elevated and went on a whole food plant based diet, that 125 went down to 104.

And so the the blood pressure improvement is dramatic. So that's my personal blood pressure story. But the ones that have impressed me the most are the people who did not do what I said a few paragraphs ago, which is measure your blood pressure every day.

And I would see people I see people more than once. They're passing out in their car. They are going one of them made a big appointment to his primary care doctor instead of calling me, made a big point, said, I don't know if these medications are working a feeling so terrible and got his blood pressure measured and it was 78 over 40 and and the doctor said well what are you doing?

And he said, well, Dr. Williams put me on, you know, a plant based diet and a medication because my blood pressure was 160. And the doctor actually told him, you need to eat meat so that you can take your blood pressure.

Medicine What? No it didn't. Really did. Oh, my heavens. Oh, okay. So anyway, we have some learning to do in our physician community, but ultimately we straightened the patient out, ended up off of medication because the plant based diet had dramatically improved.

His blood pressure. Uh, reminds me of patients and I've had more than a few who start a plant based diet, and their endocrinologist or other doctors will say, eat more sugar as you continue your insulin or your diabetic meds.

You're like, okay, it's kind of like you're missing the point here. It's cut them down well, as you know it. Absolutely. Certainly you cut them. That and that is the art of plant based medicine and plant based cardiology is prescribing.

There's not a lot of books on it. You have to learn by doing and and just logic. And you know, I call it kind of positive collateral damage is when you have someone, let's say, like your patients and maybe they were doing the cooking and they got better, but maybe a family member also had hypertension or diabetes.

They also get better. So make sure you tell those who are living in your home and still thinking they could get better too. Because I definitely seen medications to be decreased in family members who were not patients. So.

Absolutely. Well, thank you, everyone for listening. And thank you Dr. Williams for again spending your time with us today. And I'm sure it was very insightful and informative for many people.

It was so much my pleasure.