Episode 2 - Prof. Ralf Baron - The First Tingle Recognizing Early Signs of DPN

Speaker 1

Welcome back to Inside the Silent Storm. I'm Doctor Lim, and in our previous episode, we explored the global impact of diabetic peripheral neuropathy. Today, we are diving deeper into the cellular and molecular world of diabetic peripheral neuropathy to understand what happens when those first subtle symptoms begin to appear. The journey of a diabetic peripheral neuropathy often starts with what patients describe as just a tingle on my feet feeling funny.

Speaker 1

But behind this seemingly minor symptoms lies a complex cascade of cellular damage that, if left unchecked, can profoundly impact a person's life. Joining me today is Professor Rough Barone, an expert in the neurological mechanisms underlying complications among people with diabetes. Professor Barone is the head of neurological pain research and therapy at the UC Achilles in Germany. A global expert in neuropathic pain served in the leadership roles within Esrb, Nip, Seek and German Pain societies.

Speaker 1

We will explore the fascinating and troubling world of how hyperglycemia damages our peripheral nerves, and why recognizing these early signs is so crucial. Professor Barone, thank you for being here to help us understand the science behind those first warning signals. Professor Barone, the early symptoms of diabetic peripheral neuropathy are often ignored. Can you please offer some of the potential explanations that.

Speaker 2

Yes, I think we should focus a little bit on the passive physiology behind these problems in our patients. And we distinguish, on one hand positive, signs and symptoms and negative signs and symptoms. The positive ones are things like pustules and crawling and burning pain shooting. And the negative symptoms are a loss of function of a specific modality.

Speaker 2

For example, numbness to touch. It's a loss for temperature sensation and stimuli. And these are the first symptoms. And the the loss, problems are due to a degeneration of small fibers of the nerve fibers itself. But the positive is a hyper excitability of these fibers, which is all part of the early phenomena in, diabetic neuropathy.

Speaker 1

And just to clarify, because some people may recognize the small fibers as C fibers. Okay. And the large fiber would be the a delta alpha and the a beta fibers. Okay. Do they present differently. Yeah.

Speaker 2

They, and they have different modalities to convey. So the small fibers they convey sensations like pain for example, which is very important, but also temperature sensation, cold and warmth and large fibers like a fibers, as you mentioned, they are involved in vibration for example, touch sensations. And in the early phase of diabetic neuropathy, in many, many patients, the small fibers are affected.

Speaker 2

So they have a loss in temperature sensation. And this is one of the early signs, for example.

Speaker 1

I mean, are all people living with diabetes tend to present with this symptoms? If they were to develop small fiber neuropathy?

Speaker 2

No. The development of peripheral neuropathy in diabetes is very heterogenous. So there are many, many phases of the disease, but it's a frequent problem that the small fibers are affected first.

Speaker 1

Okay. Then do you see people with mixed type of, neuropathy?

Speaker 2

Well, in particular in the advanced stages of the disease, we see that there's a mixed, infection of the fibers, the small fibers, pain temperature, as well as, large fibers, the large afferent fibers for touch and vibration, for example. But then if the disease is advancing, then motor fibers will come as well. And we shouldn't forget the sympathetic fibers.

Speaker 2

So the sympathetic spectrum of fibers, belongs also to the small fiber range. And this is, for example, a deficit in sweating. So these are the pseudo motor fibers, which might be affected very early in the disease.

So does it mean that when you have the small fiber neuropathy. So usually the pseudo motor fibers would be affected.

Speaker 2

Yes. And many many cases we see that the sweating is affected in these patients. Correct.

Speaker 1

Professor Barone, could you please enlighten us? Have you seen any person with diabetes? They actually had diabetic peripheral neuropathy, but they never present with any of the symptoms that you have mentioned.

Speaker 2

Well, there are some cases, but, unfortunately, it's a very rare phenomenon. Yeah. But, if the diabetes is very well controlled and everything is okay. So we see some of these patients for. Yeah, even for years.

Speaker 1

Okay. So in the end the silent ones.

Speaker 2

Yeah.

Speaker 1

Okay.

Speaker 2

Correct.

Speaker 1

And because diabetes is so rampant so we have primary care practitioners might be looking after people with diabetes also have diabetologia endocrinologist and also internist. So in your opinion, at what stage that as at primary care level that we should refer people with neuropathic pain to see a neurologist.

Speaker 2

Well first I think for the primary care situation is very important to, to realize these first symptoms which we have addressed already. So like positive symptoms, tingling and positive gas, but also the negative problems. And sometimes the patients are not telling you. So you have to, to test and to ask for these particular symptoms. Burning pain is one of those as well.

Speaker 2

But if the GP is addressing this, early on, then I think it's time, to send for neurological examination, for example. So just to make a status of the nerves at this point, at this early point of time.

So can we can we have further details about what would be the potential assessment tools that a primary care practitioner would be able to use to screen and diagnose diabetic peripheral neuropathy?

Speaker 2

Well, the GP's I think they can do the really simple tests and this is for small fibers thermal test. Yeah. To apply the warm or cold stimulus to the feet but also touch stimuli to look for the A5 a function vibration. The tuning fork I think is very important. And if a hammer is there then they could do the ankle reflexes, which is in many, many, many cases a very early symptom.

Speaker 2

As well, the reduced ankle reflexes.

Speaker 1

Just doesn't trigger you the bit. Professor Barone, do they need to do all. Or they can actually select one out of these few that we already mentioned.

Speaker 2

Well, because we discussed earlier that, some patients have more effectual small fibers. Others, have, an infection of large fibers because it's heterogenous. I think they should use a battery of tests. It's really easy to use bedside testing. They they can do and they should. You should do.

Speaker 1

Then what about dose? Because sometimes when we were reading they have, nerve conduction tests. You also have EMG and then you even have the QST. So are these tests easily available? Are these test necessary?

Speaker 2

Well, so if if it comes to nerve conduction studies. So nerve conduction, studies only can assess the large fiber function. So you will lose all information about the small fibers completely. So therefore I think this is a test for the later stages. In the neurological setting. The same holds true for EMG. EMG is muscle activity.

Speaker 2

So this is motor deficits. And this is a really late sign for Palin policy in diabetes quantitative sense. You testing QST as you mentioned is is really based on on apparatus. This is expensive equipment. So I think this is also, something wood specialist should do, but not the GP. Also not the normal neurologist.

Speaker 1

Then is there any objective assessment tool that we can detect diabetic peripheral neuropathy at the earliest stage, like small fiber.

Speaker 2

Well that the there are some tests again not for GPS. You can do skin biopsies for example. You can count the epidermal nerve fiber density. This is kind of invasive. You can use quantitative sense with testing to assess the, the function of the See fibers, thermal and cord fibers, for example. Again, expensive and time consuming. So is not an easy objective test.

Speaker 2

To identify this, you have to listen to your patient and to you to use some bedside test. And this very early on in the disease course.

Speaker 1

So I mean, if I were to see a person with diabetes, I wish he about the potential symptoms. I'm burning pain and and they've been tested. I did some of the bait sight, sensory testing, vibration, proprioception or the pinprick and touch. So it's likely to have diabetic peripheral neuropathy. Should I refer to a neurologist for further testing?

Speaker 1

Or I can actually start treating.

Speaker 2

I think you should immediately start treating because this is the most important thing to treat test. But really that we can stop the progression of the disease and you can stop the progression of, neuropathy if you treat the diabetes correctly. So, but at some point during the course, I think a neurologist should, see the patient as well to do a status of the entire nervous system.

Speaker 1

So is there any red flags? So some signs that if we see that you straight away seeing that a neurologist referral is indicated.

Speaker 2

But I think if the disease or the polymerase apathy in particular is really rapidly progressing, this is a red flag for us where you should send it to a, neurologist because there might be other causes of neuropathy. And this, is then this has to be ruled out by a neurologist, I think.

Speaker 1

Okay. Points taken. Thank you. One last question, Professor Barone. In in your opinion or even in this emerging field, do we have any specific emerging, new markers or tests that can actually predict the onset of diabetic peripheral neuropathy?

Speaker 2

Well, I have to admit, no, unfortunately not. So we have to rely on this, what we discussed already, and, we just have to do it. And again, we have to listen to our patients because they are able to communicate these problems. And then we have to be aware of them.

Speaker 1

Professor Barone, this discussion has been incredibly illuminating. What fascinates me most is how much is happening at the cellular level long before patients, or sometimes even we as clinicians, recognize the problem. The key message I'm taking from today's conversation is that diabetic peripheral neuropathy is not an inevitable consequence of diabetes, but rather is a preventable and treatable complications when caught early.

Speaker 1

The molecular mechanisms you have described remind us that behind every first single is a complex biological story that deserves our attention and action for our listeners, especially those living with diabetes. I hope today's episode emphasizes the importance of regular food

examinations and not dismissing those early, subtle symptoms. What might feel like just a little numbness could be your body's early warning system.

Speaker 1

Next episode, we will explore understanding the pain puzzle neuropathic pain fundamentals. We will dive into why the pain of diabetic peripheral neuropathy is unique and often difficult to treat, and the meaning the fundamental differences between neuropathy and other types of pain. Remember, knowledge is power when it comes to managing your health. Thank you for joining us. As we continue to unravel the mysteries inside the silent storm.

Speaker 1

Thank you for joining us on this journey. And remember in the fight against diabetic peripheral neuropathy. Knowledge truly is power. Until next time, take care of yourself and each other.