



## MIGRAINE WORLD SUMMIT

INTERVIEWS WITH WORLD LEADING EXPERTS

# TRANSCRIPT

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**LINK BETWEEN UNRESOLVED TRAUMA AND MIGRAINE**

**GRETCHEN TIETJEN, MD**



**Introduction** (00:04): You know, they say with migraine that, it looks like about roughly 50% is genetic, 50% has to do with environment. And then there's an interaction. And I think that, you know, there may be some people that are prone to getting migraine and they may not have the genetic predisposition to it, but it's through their, you know, their environment. And it's not just, I mean, it can be early life stress from, you know, abuse, but it also can be for many other things that can be very stressful, in general.

**Carl Cincinnato** (00:34): Childhood abuse is a major public health problem. In the United States, there's nearly 1 million substantiated reports of physical and sexual abuse of children each year and many more unverified and unreported cases. The majority of reported cases involve, in order of prevalence: neglect, physical abuse, and sexual abuse. Emotional abuse is a more elusive and insidious form of maltreatment than physical and sexual abuse, but it receives little scientific and public attention, and only recently has been recognized as a distinct form of maltreatment. All of these maltreatments are often referred to as adverse childhood experiences, or ACEs, for short. To help us find out how these adverse childhood experiences can contribute to migraine and to explore paths to recovery is Dr. and professor Gretchen Tietjen. Dr. Tietjen is a distinguished professor at the University of Toledo, where she specializes in headache medicine and vascular neurology. She's the director of the Headache Treatment and Research Center. She's pioneering the research on childhood abuse and migraine, and her research has been published in many medical journals. And she has been in practice for over 30 years. Dr. Tietjen, welcome to the Migraine World Summit.

**Dr. Tietjen** (01:51): Thank you for having me.

**Carl Cincinnato** (01:53): Why is childhood abuse or maltreatment such a big problem?

**Dr. Tietjen** (01:59): Well, it's probably been a big problem forever. I think that we have been paying more attention to it recently because of the outcomes that we know are associated with it. So studies that started probably 30 years ago have been able to show that different types of maltreatment or dysfunctional family climates actually lead to conditions in adulthood, both mental health conditions and also physical conditions that ... you know ... so these problems, this early life stress, lasts a lifetime as far as what it does to the body and the diseases that we get.

**Carl Cincinnato** (02:42): How common are adverse childhood experiences?

**Dr. Tietjen** (02:47): Well, it depends on the population that you look at on some general population ... and it depends on the questions that you ask to ascertain it. So different questionnaires might have different prevalences and I'm trying to think, just offhand, I don't want to misstate them. But, you know, they have ranged ... if you look at a childhood population where they have ... I think the last big survey I saw, showed maybe 12 1/2% of the population has some adverse childhood experiences looking in the forms of abuse, predominantly in neglect. But if you ask adults about their childhoods, you get much bigger numbers. So these are ones that aren't necessarily ascertained, but anywhere between 20 to 40-45% of people will say that they had, you know, adverse childhood experiences that they felt had some impact to them.

**Carl Cincinnato** (03:47): So it's almost a quarter to half of all adults that have experienced some type of trauma?

**Dr. Tietjen** (03:52): Some type of trauma.



**Carl Cincinnato** (03:52): Is that higher in people that have had ... that have migraine?

**Dr. Tietjen** (03:52): Yes and no. It kind of depends a little bit on the population. We had looked at one population that we felt that the questions were asked a little bit different. So sometimes, you know, you're comparing two things that really aren't comparable. But yes, it looks like it is higher at least for emotional abuse. And I'm getting that predominantly from a study that we did in a population. It was one from something called the Add Health Study or the National Longitudinal Study of Children and Adolescents, where they started when they were in between 8th and 12th grade and they followed them through, and I think they're on a wave. We looked at them in a wave between when the children would ... well, the participants that were children ... when they enrolled were 28 to 32 years old and now, they're looking at them again up in their 40s to 50 years old. So, we'll be able to see a whole range of conditions that would potentially crop up at a slightly older age. But what we had found was that emotional abuse was the one that was most clearly associated with development of migraine. So, it didn't look in that study as much like sexual or physical abuse were as important or was different than the general population. It was the emotional abuse.

**Carl Cincinnato** (05:23): Are men and women equally affected?

**Dr. Tietjen** (05:26): Well, men tend to be affected more ... are more likely to have migraine and are just sort of more likely to be affected by physical abuse. Women, and unfortunately, you know, boys as well as girls can be sexually abused, but it is somewhat more common in girls. And then, emotional abuse seemed to be reported more commonly as having happened in childhood by females.

**Carl Cincinnato** (05:56): So, you mentioned a couple of different types of abuse just then. Can you tell us some of the main forms of abuse and discuss whether emotional abuse is inherent in all types?

**Dr. Tietjen** (06:08): Neglect — emotional and physical neglect — as well as for the abuse types, it would be emotional, physical, and sexual abuse. In the ACE Study, which is the Adverse Childhood Experiences Study, they used questions that kind of came from that childhood trauma questionnaire that I had just sort of explained those five abuse and neglect types of, you know, maltreatment ... but they added some other things in. And so, the things that they added in were things that got at the household. So, had the parents been, you know, separated, divorced, you know, even if there wasn't necessarily abandonment, but you know, the child having gone through that, if there was a parent that had a drug or alcohol problem, if they witnessed abuse — that's one that probably has a lot of overlap with emotional abuse. But if they witnessed one parent or ... the two adults in the household abusing each other. And then also ... if the ... oh, if somebody in the family had gone to jail, those are the main ones that I can recall. There's five different ones that they looked at it in, you know, in the studies. But the ACE Study, which I did look at with the group that had put that study together, they only had a question on frequent headaches. And the population of people involved from males to females was like 3-to-1. So, it looked a lot ... and the prevalence was about 14% of migraine. So, it looked a lot like it was probably migraine, but they didn't ask specifically about migraine. But what we found in that study was that all the different types, every single type of abuse and neglect were more common in the frequent headache group than it was in the group without headache when we stratified it that way. And the one that was most tightly associated with headache was emotional abuse.



**Carl Cincinnato** (08:14): We know that many people would say that stress can be a trigger of a migraine attack — an acute attack as an adult with migraine — but experiencing profound stress or trauma, like the ones we're talking about, as a child is just something else entirely. Can you tell us about how that might affect a child differently?

**Dr. Tietjen** (08:36): If in adulthood, I think what happens is if people react differently to stress; if they've had early life stress as compared to if they didn't and they just were under a stressful situation. So, we sometimes .... see things that seem like rather typical stresses that just happen in adulthood — family problems, job problems, death of a loved one — have a more profound impact, and an impact on things like migraine, than if there had never been any of the childhood abuse. So, you know, different people react differently to things.

**Carl Cincinnato** (09:13): What are some of the short- and long-term effects of stress?

**Dr. Tietjen** (09:17): There's both structural changes to the brain. There are also some functional changes to the brain when they've looked at, you know, you're able to get at that by looking at, you know, things like MRI studies or some of these functional connectivity studies. When they look at structure just by morphometric studies, like you do an MRI scan, and you measure the different parts of the brain and they have definitely shown that certain parts of the brain that are really ... process a lot of the stress, like the hippocampus, the amygdala, you know, some of these emotional centers. And also, in some cases, I guess you could call it the pain-matrix parts of the brain that incorporate pain and emotional experiences together, that those tend to be somewhat atrophied and — meaning that they're sort of shrunken a little bit. And the reason is thought to be is that when there's old stress, there's glucocorticoids that, you know, chemical substance that get released in the body and they're probably at high levels much more of the time than if a person doesn't have a lot of stress and that those actually change the neurons there, the dendrites. And so, sort of, the branches, the connectivity and they sort of atrophy and shrink and then the whole, that part of the brain, shrinks somewhat. So that's one thing that has been, you know, shown, demonstrated in both, actually, in both migraine populations — interestingly, some of those same areas are narrowed — and in people that have been abused. And no one's really looked at the two populations together, like, you know, a study of MRI and the changes in the structure in a person that has migraine that has undergone abuse or has not previously undergone abuse, which is really a study that I think would be probably very enlightening.

**Dr. Tietjen** (11:12): But I think it also has changes in the sympathetic nervous system and some of the responses, you know, some of these are acute ones like fight or flight responses. But also things that ... there's just more interruption of the whole stress axis, which we call sometimes the hypothalamic-pituitary-adrenal, or HPA axis, that it changes and it gets dysregulated. So, and also, one interesting thing, or like, inflammatory system, immune systems, those change in adulthood in children that have been abused. A really interesting study was done in New Zealand and it was one of these birth cohort studies. It's called the Dunedin Study. And they took children from birth, and now I think they're probably up in their 40s or so, but they looked at children all the way through the life, you know, through their lifespan. And they recorded whether there was known abuse that happened to them and these are things that maybe were, you know, reported and, you know, through records, court records and what else; and then those where it was maybe suspected but it wasn't ... it was probable but not definite; and then those where there was no question about it. And then when they got to adulthood, controlling for all the things of like the stress going on in their life at present, their lifestyle, you know, choices, you know,



whether they smoke or drink, there's drug users, that type of thing. They look, though, at markers of inflammation, like C-reactive protein is a big one. But they looked at fibrinogen and white blood cell counts. Anyway, and they found that if they didn't have any abuse, and we use it sort of as a reference group, it was very low inflammation. If they were somewhat in that suspected but not sure, they had a higher level. And then if it was definite, it was a much higher level. And this is like all these years later. And so, there are changes that go on that we know last far into adulthood that may have long-term consequences because abuse has been tied in some of the studies with stroke and also with Alzheimer's dementia. And maybe it has something to do with glucocorticoid processing.

**Carl Cincinnato** (13:32): And it doesn't sound like whatever doesn't, you know, whatever doesn't kill you only makes you stronger. That's not the case here. This is where these changes that are happening are not favorable for the individual.

**Dr. Tietjen** (13:42): Yeah, it's true. But it's interesting with stress. You need a certain amount of stress. So it's thought that some stress in life is probably, you know, in childhood, too, it's probably a good thing. It really sort of, maybe, sort of, hardens your systems a little bit as far as making them more robust. Maybe your immune response is stronger and that type of thing. And that it's like — what they sometimes refer to, I think — Bruce McEwen is a person that had talked about this, but it is toxic stress ... that is like unrelenting stress where there's no buffer. You know, there's no, probably, like, support system. There's nothing to offset it or to make it OK.

**Carl Cincinnato** (14:29): Does the presence of depression or anxiety mediate or influence the impact that an adverse childhood experience can have?

**Dr. Tietjen** (14:39): I did a ... I looked one time at our data and I thought it was interesting because, you know, this whole depression question. And I looked at people living with migraine that had depression and those that had been abused, or said they had been abused, and those that had said they had not been abused. So let's say that abuse was the, you know, early risk factor in some of the cases. What we found was the people living with migraine that had depression and that said they had been abused in childhood, they had much more severe migraine. They had an earlier age when migraine started. They were more likely to have been hospitalized for migraine, more likely to have chronic migraine and their depression — they were more likely to have had more severe depression, refractory to medications, and admissions to hospitalizations compared to the group that said they had not been abused, which is, you know ... it was a small study and, you know, it was sort of just a subset of some data and I don't ... I know we published it in a poster. I don't even know if I ever put it in a paper, but I just thought it's just very interesting that maybe, you know, you can get migraine, of course, and it has nothing to do with early life stress in many cases. But you know, it may be that if that is something that happened in the past, it really can put you on a pathway of more severe condition. So, you know, they say with migraine that it looks like about roughly 50% is genetic, 50% has to do with environment. And then there's an interaction. And I think that, you know, there may be some people that are prone to getting migraine and they may not have the genetic predisposition to it, but it's through their, you know, their environment. And it's not just ... I mean, it can be early life stress from abuse, but it also can be from many other things that can be very stressful in childhood.

**Carl Cincinnato** (16:36): Do you think the traumas that happen in childhood can predispose someone to chronic migraine along with all the symptoms that can be a fallout as a result of that childhood experience?



**Dr. Tietjen** (16:47): Yes. No, that's definitely what I think. I think that they're more likely to have migraine and they're more likely to have chronic migraine. When we looked at a headache population, not to prove the link between abuse and migraine, but to look in a headache population of what did the headaches look like if they had abuse — they were more likely to be chronic than they were to be episodic. If they were chronic, they were more likely to be like a continuous, "I have a headache all the time," not like just, "I have 15 days of headache a month." It was like "I have headaches nonstop every day and they never, you know, they're continuous." And, you know, so there was something even different about the, you know, the headaches in that population, and of course, they were more likely if they had headaches and the history of abuse, you're more likely to have depression with it. We know depression is tied to chronic migraine, but you know, those that have abuse as a risk factor for migraine also are more likely to have chronic migraine and depression with it.

**Carl Cincinnato** (17:51): Should doctors be asking their patients about potentially some adverse childhood experiences? Is it helpful for them to know it or is it none of their business?

**Dr. Tietjen** (18:00): Having a questionnaire or asking the questions directly about depression and anxiety is probably very common in most, at least in most headache clinics, but also maybe more and more in primary care physician's offices, as well. So, you know, if you're getting at those conditions that you ... maybe you're going to do something about and treat, then like does it really matter what their early life was? And I think it does for a few reasons. One of the things that we're obligated as physicians to do, and this is through, you know, things like Joint Commission standards and all that, is to ask people about their current home environment. Is it safe? Are they safe? Are they being abused now? Well, I will tell you that in the data that we had, that my — and this was in sort of the migraine clinic — but if a person had childhood abuses, their likelihood of being revictimized in adulthood was much higher than it would be if they did not have early life stress. So, you know, I think that it can kind of key you in to that these are people that are at higher risk for having a current situation that you could maybe do something about.

**Dr. Tietjen** (19:19): The other thing is, though, I think it's important because some people that I've asked, have they dealt with it in any way, you know, sometimes they'll say, "You're the first person I ever told." And I mean, I'm not a psychiatrist. I don't think that just telling me is enough. And, especially, if they have some high depression scale. That there are things like trauma-focused cognitive behavioral therapy that can sort of maybe be particularly beneficial if you know that there's this past history of trauma and that they might be ... find ways to sort of get their stress systems more physiologically realigned. You know, if they go through some of these types of therapies where it maybe ... it would change the effects that it would have on them down the line. And so, I think that recognizing kind of what's in their past and addressing it, you know, if they've said that they've gone through all these things, you know, then I think that's ... that's fine. But, you know, maybe they haven't. And I've often wondered if just cognitive therapy, in general, rather than just throwing a lot of different medications on them would be more helpful, would be really sort of almost, you know, necessitated in order to get a good response. But another thing about it that could potentially make a difference is ... not that we don't use these medications anyway ... but if you look at epigenetics and the effect, that's sort of how the social environment gets translated into things that are going to make an effect on that person's health. And what it does is it doesn't change the actual DNA but it upregulates and downregulates some of the genes. So, they almost look like they have a different DNA, but it's sort of like the epigenome



changes rather than the actual genome. And we know that early life stress, I think it causes changes in about ... I don't ... I can't remember if it was 200 or 2,000. My husband always makes fun of me for that. But anyway, it's like, I can never remember the numbers, but I think it was 2,000 genes actually get changed with, you know, early life stress.

**Carl Cincinnato** (21:41): What would you say is best practice treatment for someone who's had an adverse childhood experience?

**Dr. Tietjen** (21:48): I say that probably having them go through some kind of training where they learn to control the effects that stress have on them physiologically. You know, you can't always control your environment, say, OK, just tell them not to have any stress. But you know, when things stress them that to have it where ... or, you know ... or when a stressful event occurs, that physiologically, they don't have quite, you know, they sort of reset their stress thermostat, you know, that you can kind of change how the HPA axis relates to the, you know, the stress axis relates and maybe that it doesn't have such profound effects. And I think that some of these cognitive behavioral therapies, and relaxation therapies, and probably mindfulness and meditation, and there's probably just ... yoga, you know, some of these things like moving meditation maybe really sort of change, sort of, the person's ability to deal with stress. And that might be something that's very important because I think that, you know, the studies in adults — and there haven't been tons of studies of stress in migraine, even though we know it's probably important. But you know, the ones that have been done have shown that the migraine is most likely to come right after a stress. Dr. Lipton had done some work in that area. And I think that maybe if they don't have the same response to either mental stress ... is something happening ... or maybe a physiological stress on their body. You know, we think about menstrual-related headaches, maybe, you know, maybe you could even alter things like that and just sort of alter the triggers just a little bit.

**Carl Cincinnato** (23:37): Are there any final thoughts that you'd like to leave with the audience, perhaps for someone who's had a childhood adverse experience and has migraine?

**Dr. Tietjen** (23:49): I think that the thing is, number one, you're not alone; that it maybe is, in some way, associated with it; that doing things to really try to control the amount of stress you have currently, may have some definite beneficial effects on, you know, on your health. And I think that not being afraid to talk about it with a health professional because, you know, even if they're not the right person, they may be able to help you get help from someone who is the right person particularly if it's one that hasn't, you know, been treated or even acknowledged previously that might be very helpful to, sort of, get you on the road to healing that might have ... I think the thing that interests me most is it might have beneficial effects, not just now for your migraines, but maybe you're a person that was on a trajectory to get other pain conditions — because migraine is sometimes the first one people get, you know — and it keeps you from getting those or if it has something to do with your vascular health, because we had shown vascular biomarkers were associated with migraine when they had a history of abuse. But maybe, you know, it would make you less likely to have heart disease, strokes, and, you know, some of these other diseases that come later in life.

**Carl Cincinnato** (25:13): Where can people find you or follow your work?



**Dr. Tietjen** (25:19): You know, most of the work that I do is published. And I know sometimes that's hard because not everybody has access to articles that are ... that are published. But I think a number of them are, you know, free download of the PDFs and that kind of thing. And so I think that that would be one way. I don't have a, you know, a website or anything where I've talked about it, but I have talked about it to the American Headache Society. I've written things for them that kind of go over abuse that ... and those are things that are ... that the public has access to. And I think that, you know, I've also done, I know, a number of other interviews and that type of thing for people where that would be sort of in the lay press information.

**Carl Cincinnato** (26:15): Dr. Tietjen, thank you so much for joining us again on the Migraine World Summit.

**Dr. Tietjen** (26:17): Thank you very much for having me.