cancer NEWSLINE

>> Welcome to Cancer Newsline, your source for news on cancer research, diagnosis, treatment and prevention. I am your host Dr. Oliver Bogler. Our guest is Dr. Sarah Prinsloo, Assistant Professor in Palliative Care and Integrative Medicine Research. Welcome.

>> Thank you.

>> Dr. Prinsloo, you've been working on something called chronic chemotherapy-induced peripheral neuropathy. Can you start by defining what that is?

>> Absolutely. So after chemotherapy treatment, a large majority of patients suffer with things like pain, numbness, tingling, complete loss of sensation that can be quite debilitating to the point where they need to use walkers to walk. They are off-balance sometimes. Sometimes can pick up fine motor -- can't use their fine motor skills to pick up objects, that sort of a thing. So, survivorship for them means something quite different in terms of recovery. They're still dealing with some issues after the chemo.

>> Those are some serious challenges. So, you've come up with a new way of trying to help those patients with something called neurofeedback. What is that?

>> Absolutely. Neurofeedback's been around for a long time. Since the sixties in fact. It's old NASA technology. But, now we've gotten to where we can bring it into a more clinical world. Treating pain conditions is obviously my interest and so, we do EEG neuroimaging. And we figure out where on the brain these signals from the periphery are being processed. And, for example, if people's feet are numb, we know there's aberrant signals coming from the feet but the brain is actually the source of the perception of that, that problem. And so, we figure out where in the brain that's happening through a QEEG or a brain map. And then we do a treatment plan. And then they play video games for us, the participants do, such that they are rewarded every time they change their brain function. And the reward looks like a pretty picture on the screen or an auditory beep goes off. And then, with repetition they learn that and they can do it without us.

>> So, A brain map. How should we imagine that? How do you get a brain map?

>> So, a brain map. You do a 19 electrode EEG. We put it in a database of hundreds of other patients or people without neuropathy. And, we do comparison maps, basically. So we look for hotspots. And the images actually look like an MRI would look. But, it's highlighted in where areas of activity are. So we know where to target and then we use our operant conditioning in those areas.

>> I should probably let our listeners know that I participated in some of your research. I've been one of your guinea pigs.

>> You have.

>> Very grateful. And it's so I had to wear a hat or sort of a web on my head. It wasn't painful and your technologist squirted some gel in there to make good conduction with my scalp. And that's how you made the map, right?

>> Absolutely. Yes. That's the first step. And then, once we get the data back, then we decide where on your scalp we're going to treat monitoring your brain wave activity while you play the video games for us.

>> So, you're training the brain of the patients. What's the ultimate result?

>> So the ultimate result in what we showed in a recent publication in Cancer, is that we can change the activity under the electrodes that we deem the most important via the brain map. And we do that through operant conditioning. Once the brain is taught to do a more normal interpretation of the aberrant signals being sent from the hands and feet and fingers and toes then it basically can interpret, what I think, is aberrant signals. And then the brain says, "Well, this is just normal for me now so I'm not going to give you a symptom such as numbness or tingling." So, it just, sort of, reinterprets those weird signals.

>> Does it work for most people?

>> Most people yes. Yes.

>> And, does it last? Does it -- once the brain is trained does it remember this?

>> So, in our first study we followed patients for four months afterwards. And, there was some regression to baseline, but it was still much better than when they came into the study. So we don't have any long-term, you know, year follow-ups or so forth. But we're very optimistic. Again, we're limited because it's a research study. So, we give, as you know, participant's 20 sessions of neurofeedback. They may need a little bit more than that to make it more long-lasting. But that'll be another study. We don't know yet.

>> I have to say that I think I finished your study a few months ago and for me it's been fantastic. It really changed -- I had a lot of numbness in my feet. It's really change the way my feet feel. And I'm very grateful to you for doing this.

>> I'm so happy.

>> How does a patient who's interested in this, how do they access this kind of opportunity?

>> So, they can contact me directly. My information, my email is on the website, I believe. I get a lot of referrals from MD's, so if they are seeing their oncologist for a follow-up visit or their survivorship clinic or anything like that, those folks also know how to get in contact with me. So, we'll try to make it as accessible as we can.

>> And what's next in your research? Where are you taking this next?

>> I want to look at prevention. And so, I'm very interested the brain and interpreting these funny signals from the periphery. And if we can kind of track that overtime as patients are undergoing chemo, for example, there's a potential to intervene for people that may have worse neuropathy than others,

for example. We could jump in early, do some neurofeedback, more of a PEAK performance model before or during chemotherapy.

>> Well, thank you very much Dr. Prinsloo. You're really making a difference in the lives of our patients.

>> Thank you.

>> For more information, visit mdanderson.org. Thank you for listening to Cancer Newsline. Tune in for the next episode in our series.