

Transcript Details

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MS and the Ketogenic Diet: Potential Impacts on Inflammation and Relapse

Announcer:

You're listening to *NeuroFrontiers* on ReachMD. On this episode, we'll hear about how ketogenic diets can impact patients with multiple sclerosis, or MS, from Dr. Michael Kornberg. He's an Assistant Professor of Neurology in the Division of Neuroimmunology and Neurological Infections at Johns Hopkins University School of Medicine. He also spoke on the matter at the ACTRIMS Forum 2025. Let's hear from Dr. Kornberg now.

Dr. Kornberg:

How can a ketogenic diet benefit people with MS? There have been a lot of studies in animals on direct effects of the ketogenic diet on the brain, and there are some mixed results, though, there is some suggestion that it might protect nerve cells from injury. And some of our listeners may know that the ketogenic diet has been a treatment for epilepsy for many years, and so there almost certainly are effects on the brain. Only time and further studies will show how that impacts people with MS.

Our specific work looked at the effects on the immune system, and what we found was that six months of this diet essentially had an anti-inflammatory effect on the peripheral immune system. So it decreased inflammatory activation of myeloid cells, which trigger the immune response for relapse in MS, and this led to decrease in inflammatory cytokines and other proteins and a change in the immune cell population that you would expect would lead to a lower risk of relapse.

The work that we are doing is really specific to relapsing MS, and the effects that we have seen on the immune system would be expected to decrease the risk of relapse. And so what we hope is that the ketogenic diet might be an adjunct therapy for people either in addition to their disease-modifying drugs or, for a rare population that has mild disease, may be sufficient to serve as a treatment to prevent relapses. There may be implications for people with progressive MS, but we have not studied that, and really no one has studied that to this point.

What are the risks and challenges of a keto diet? The primary challenge is just adherence. It is a low-carbohydrate, high-fat diet that can be difficult to adhere to. We were studying what's called a modified Atkins diet, which is a somewhat less restrictive version of the keto diet, making it a little easier to adhere to. But beyond those challenges, the point that I want to be very clear about is what we found in our study were proxy measures of immune system function. They were not clinical outcome measures, and so we don't actually know yet whether a ketogenic diet really does prevent relapses and whether its overall effect on MS is positive or negative, and that's a really critical point to make because we're not at a point where we should be recommending this diet to patients yet.

And along those lines, there are some other potential risks of the diet. Because it's a high-fat diet, there can be consequences for triglycerides and lipid and cholesterol profiles, and the long-term consequences of that are not known. And even though I mentioned that there have been studies showing a neuroprotective effect of the diet, there have been other studies that have suggested potential dangers, including effects on the kidneys and heart and even something we call senescence in the brain, which is a type of accelerated biological aging. And so we really need bigger studies with clinical efficacy and safety outcomes before we're recommending anyone to start this.

What role do we see the keto diet playing in MS? The lowest hanging fruit is as an adjunctive approach to help prevent relapses. There has been extensive research in animal models that the ketogenic diet and other dietary interventions can have anti-inflammatory effects, and so one of my big interests is establishing nutritional guidelines for autoimmune diseases, and MS is an autoimmune disease. What I hope in the future, if this research pans out in the direction we hope it will, is that this might be an approach people use to aid

preventing relapses. I think for your average patient with MS, it's not going to be enough to replace a disease-modifying drug, but it could possibly help choose a drug that has less of an effect on your immune system. Or for people with mild disease, as they're getting older and the risks of disease-modifying drugs are getting greater, it may be an alternative for them to deescalate or come off of a therapy. I am also very interested in the effects of diet and metabolism on processes within the brain that are relevant to progressive MS and myelin repair, but we just don't have any of that data yet to see whether dietary interventions will be useful in that context.

Announcer:

That was Dr. Michael Kornberg discussing the potential benefits of a ketogenic diet in patients with multiple sclerosis. To access this and other episodes in our series, visit *NeuroFrontiers* on ReachMD.com, where you can Be Part of the Knowledge. Thanks for listening!