Supplements for Chronic Fatigue Syndrome?

Studies have suggested that coenzyme Q₁₀ (CoQ₁₀) and nicotinamide adenine dinucleotide (NADH)—common antioxidant dietary supplements with known cardioprotective effects—might relieve symptoms of chronic fatigue syndrome (CFS). Both supplements have been shown to significantly reduce fatigue levels and other symptoms associated with chronic diseases, such as fibromyalgia. Studies of their utility in treating CFS, however, have been very small with inconsistent conclusions, say researchers.

Because research has shown that a mitochondrial failure reduces the rate of adenosine-5-triphosphate (ATP) synthesis, the central agent of energy production in CFS, and because CoQ₁₀ and NADH increase cellular ATP production via mitochondrial oxidative phosphorylation, the researchers decided to conduct a proof-of-concept study to assess the effect of supplementation on heart rate, with secondary measures of fatigue, pain, and sleep.

In the eight-week study, 80 participants received CoQ₁₀ 200 mg once daily plus NADH 20 mg once daily or placebo (73 participants were included in the analysis). Heart rate was measured at baseline and at the end of the run-in period. Fatigue, pain, and sleep were evaluated at baseline, then again at four and eight weeks using participants’ self-report questionnaires.

At eight weeks, the group given CoQ₁₀ plus NADH had significant reductions in maximum heart rate during a cycle ergometer test, compared with baseline. Participants also reported a reduction in fatigue at each follow-up visit, although pain and sleep did not improve. The lack of effect on pain was an “unexpected result,” the researchers say. They believe the group receiving placebo was more sensitive to the placebo effect because they were anticipating a certain improvement, and that patients receiving active treatment would detect the objective improvement in symptoms like fatigue and be less sensitive to the less intense placebo response.

The supplementation was safe and well tolerated, the researchers say, and could be added to conventional CFS therapy.

Source: *Clinical Nutrition*, August 2016

Burning Mouth Syndrome due to Varicella Zoster

Burning mouth syndrome (BMS) may be a clue to herpes simplex virus type 1 (HSV-1) or varicella-zoster virus (VZV), say clinicians at the University of Colorado. They report on two female patients with BMS who had elevated levels of serum anti-VZV immunoglobulin M (IgM) antibodies.

One patient had had BMS for eight months, the other for two years. Routine blood counts, and liver, kidney, thyroid, and other tests were normal for both patients. No VZV, HSV-1, or HSV-2 DNA was detected in saliva samples, but serum anti-VZV IgG antibody was present and elevated.

Both patients had received the zoster vaccine within a year of the onset of BMS, but the clinicians say it “seems unlikely” that immunization contributed to their condition because none of more than 19,000 adults who received the zoster vaccine in the Shingles Prevention Study developed BMS.

Oral valacyclovir 1 g three times a day for two months reduced the pain to “minimal” for the first patient, although severe pain recurred when the dose was lowered or the drug was discontinued. She has continued to improve on the daily dose. The second patient was also started on oral valacyclovir 1 g three times daily for three months. Her anti-VZV IgM antibody remained elevated after three months. The same dose, continued for another three months, reduced the pain by 60%. The dose was lowered to 1 g daily. After eight months, she was pain free for three to four days a week; the pain otherwise was mild.

The clinicians suggest not only evaluating patients with BMS for VZV or HSV-1, but also being aware that prolonged antiviral treatment may be required.

Source: *BMJ Case Reports*, July 2016

New Technique IDs Stroke Patients for Treatment

Patients who have had ischemic strokes often receive endovascular treatment along with tissue plasminogen activator (tPA) to break up clots in the brain, but bleeding is a serious risk. While tPA has a distinct window of effectiveness, less is known about endovascular treatment. A new imaging method may help resolve that by identifying stroke patients who are not likely to benefit from endovascular surgery, according to a recent study.

The researchers collected magnetic resonance imaging (MRI) brain scans from more than 100 patients before they underwent endovascular therapy, within 12 hours of the stroke. Using a new method of image processing, the researchers got detailed measurements on just how much a stroke disrupts the blood–brain barrier and combined those measurements with findings from the Diffusion and Perfusion Imaging Evaluation for Understanding Stroke Evolution (DEFUSE-2) study.

They found that large degrees of blood–brain barrier disruption were associated with severe bleeding following endovascular surgery. Extensive breakdown of the blood–brain barrier was associated with parenchymal hematomas, which 24 of the 100 patients in the study suffered. The study also showed a link between the location of blood–brain barrier damage and post-treatment bleeding.

“The biggest impact of this research is that information from MRI scans routinely collected at a number of research hospitals and stroke centers can inform treating physicians on the risk of bleeding,” said Richard Leigh, MD, one of the study authors.

Source: National Institutes of Health, June 2016

Unraveling Disparities in Breast Cancer

Why are black women more likely than white women to develop certain aggressive subtypes of breast cancer or to die from the disease? The National Cancer Institute (NCI) has
launched a collaborative research project to try to pinpoint genetic factors that underlie these and other disparities.

The Breast Cancer Genetic Study in African-Ancestry Populations is the largest study ever to investigate genetic and biological factors behind black women's risk of breast cancer. It won't enroll new patients, but will bring together researchers and data from a variety of venues, including the African-American Breast Cancer Consortium and the African-American Breast Cancer Epidemiology and Risk Consortium. Minority scientists from various institutions are playing an important role in the study, the NCI says.

The researchers will share biospecimens, data, and resources on 20,000 women involved in 18 previous studies. The genomes of those women will be compared with those of 20,000 black women who do not have breast cancer, as well as with white women who do. The project will investigate genetic variations associated with breast cancer risk in black women and gene expression in tumor samples to identify genetic pathways.

“This effort is about making sure that all Americans—no matter their background—reap the same benefits from the promising advances of precision medicine,” said Douglas Lowy, MD, Acting Director of the NCI. “I’m hopeful about where this new research can take us, not only in addressing the unique breast cancer profiles of African-American women, but also in learning more about the origin of cancer disparities.”

Source: National Institutes of Health, July 2016

**Study Sheds Light on Origins of Diabetes**

An international study “unprecedented in both scale and scope” has provided some important answers to the mysteries of how diabetes develops—not least of which is the answer to a century-old debate about whether genetic differences are shared and common, or rare and individual.

Led by researchers from the United States and England, more than 300 scientists from 22 countries used DNA from 120,000 individuals to pinpoint genes and their variants.

The collaboration brought together two research projects: GoT2D and T2D-DENES. The research teams completed whole-genome sequencing of more than 2,600 people and exome sequencing of 12,940, as well as genome- or exome-wide array genotyping of 111,548 people. Unlike most previous studies, which involved only people of European ancestry, this study included people with ancestral origins in Europe, South and East Asia, the Americas, and Africa.

The researchers were able to highlight “with unprecedented precision” a number of genes directly involved in the development of type-2 diabetes—promising new avenues for research into treatment or prevention. They also identified more than a dozen genetic regions that harbor variants that influence the risk of type-2 diabetes. Most were common to all human populations and had previously been detected by other genome-wide association studies. “While rare variants certainly influence type-2 diabetes risk, our results demonstrate that common variants shared across populations explain most of the genetic risk,” said Michael Boehnke, Director of the Center for Statistical Genetics at the University of Michigan School of Public Health and one of three senior authors of the study.

“The conclusions seem clear,” agreed Mark McCarthy, Group Head of the Wellcome Trust Centre for Human Genetics. He noted, “[T]he evidence is increasingly stacking up in favor of the view that most of the genetic risk of T2D can be attributed to common alleles that are widely shared within, and between, human populations.”

“While this large range of genetic risk may challenge our efforts at precision medicine,” said Jason Flannick, co-lead author and Senior Group Leader at the Broad Institute of Harvard University and Massachusetts Institute of Technology, and Research Associate at Massachusetts General Hospital, “our consortium offers a publicly accessible dataset, unprecedented in scope, for researchers around the world to advance our molecular understanding of type-2 diabetes.”

Sources: University of Michigan and the McCarthy Group, July 2016

**Massive Gap in HIV Screening**

Between 2009 and 2012, white males 15–39 years of age made an average of 1.35 visits to physicians’ offices each year. But in 99% of those visits, they did not get a human immunodeficiency virus (HIV) test—even though in 2012, an estimated 15% of males living with HIV had undiagnosed HIV infection. That’s worse than the findings for blacks and Hispanics, although those numbers were not much better: Only 2.7% of black men and 1.4% of Hispanic men were tested, and they were less likely to visit the doctor’s office.

Because there is room for improvement, Centers for Disease Control and Prevention (CDC) researchers analyzed data from the 2009-2012 National Ambulatory Medical Care Survey and U.S. Census data to identify opportunities for HIV diagnosis in young men.

The number of men visiting health care offices was up from 59% in 2010 and 63% in 2011, to 75% in 2014. But it appears that the age group of 20–29 years old is getting whatever attention there is. HIV testing was lowest among males 15–19 years of age and 35–39 years of age.

Why is screening still so rare? The researchers suggest providers may not know about national testing recommendations, believe that their patients are not at risk, or believe that HIV testing is the responsibility of other health care professionals in other settings.

The CDC report says interventions to make HIV testing routine, such as opt-out testing, might help increase coverage among young men who might not otherwise seek it.

Source: CDC, June 2016