

A Comprehensive Integrative Approach to Neurodegenerative Conditions

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Neurodegenerative condition (ND) is an umbrella term for a range of conditions which primarily affect the neurons in the human brain, but can also affect the spinal cord¹ and peripheral nerves.² NDs are thought to be incurable and debilitating conditions that result in progressive degeneration and/or death of nerve cells.³ A naturopathic approach can often slow down the progression of the neuronal degeneration, as well as strengthen the central and peripheral nervous systems, decrease oxidative stress⁴ and optimize mitochondrial function.⁵

Toxic Exposures: The First Place to Look

First and foremost, I investigate the patient's history of past and current toxic exposures.⁶ The link between Parkinson's disease (PD) and toxicant exposures is well established.⁷ The link between heavy metals and multiple sclerosis (MS) is also highly suggestive.⁸ Environmental exposures have been implicated in amyotrophic lateral sclerosis (ALS).^{9,10} This certainly doesn't mean everyone that has been exposed to an inordinate amount of toxicants will develop ND. Genetic vulnerability is always at play. The very apt saying applies: "Genetics loads the gun and environment pulls the trigger."

Next, I run blood tests for "acute" heavy metal¹¹ exposures and urine tests for more "chronic" heavy metal exposures. The technical definition of acute really means being exposed to large amounts of heavy metals at one time, or on a routine or daily basis.¹² In the United States, the Agency for Toxic Substances and Disease Registry helps define these guidelines of acute exposures.¹³ Albeit there are clear clinical guidelines for treating acute heavy metal poisoning, no such guidelines exist for chronic exposure, regardless of the source. This can make not only testing difficult to interpret, but treatment is poorly defined to remove "suspected" heavy metals

from the blood, organs, and even the brain.

I compare the patients' results to those of the CDC's National Report on Human Exposure to Environmental Chemicals.¹⁶ This data is updated one to two times per year. For my patients in the 80th percentile or above, I treat. I do this mostly through sweat depuration,¹⁷ exercise to tolerance, high fiber diets¹⁸ to reduce enterohepatic redistribution, glutathione,¹⁹ alpha lipoic acid,²⁰ N-acetylcysteine (NAC),²¹ vitamin C,²² probiotics^{23,24} and occasionally, if body burden is very high, oral heavy metal chelators.²⁵

I also run a battery of tests that reveal the status of key vitamins, minerals, and hormones, as well as assess markers of inflammation. That includes iron levels,²⁶ thyroid function (thyroid stimulating hormone [TSH], free thyroxine [FT4], and free triiodothyronine [FT3]), methylmalonic acid levels (MMA, a more sensitive indicator of B12 status than serum B12²⁷), vitamin E²⁸ homocysteine,²⁹ dehydroepiandrosterone sulfate (DHEA-S),³⁰ pregnenolone,³¹ testosterone,³² estrogen,³³ and many more.

I will consider tick-borne illnesses and viral^{41,42} insults — particularly if extreme fatigue is present. I run quantitative titers of Epstein Barr virus (EBV), Cytomegalovirus (CMV) and herpes simplex 6 (HSV-6). If symptoms or history are suggestive, I also include testing for *Helicobacter pylori*^{43,44} as its eradication has shown improvements in ND and dementia patients. In addition, stool microbiology cultures for assessment of the gastrointestinal (GI) microbiome⁴⁵ can also be very helpful. All these can give me a picture of potential infectious load which can activate the immune system and contribute to chronic inappropriate inflammation.

Diet is Key

I recommend all my ND patients go on a gluten-free, anti-inflammatory diet, which includes lots of low glycemic organic fruits and vegetables, such as blueberries, apples, pears, Brussel sprouts and asparagus. I recommend this diet because studies show that the inherently anti-inflammatory Mediterranean diet can improve white matter lesions.⁴⁶ I ask my patients to remove gluten from their diet, regardless of celiac disease, or sensitivity to gluten, because for some individuals gluten is pro-inflammatory, and even in my patients with negative serology and genetic tests for celiac, I see improvement after they remove gluten — some notice it within a few weeks, some within a few months.

I also suggest that they drink as much organic green tea⁴⁷ as they can, as polyphenols have been shown to be helpful in neurodegenerative diseases.⁴⁸ Decaf is fine, as with some individuals, caffeine may worsen their symptoms.

Nutrients I Use in Clinical Practice

Note the large dosage ranges, due to each patient's uniqueness, some may not tolerate higher doses. For simplicity, I am also only providing daily oral doses, not intramuscular or intravenous.

- NAC⁵⁴ 600-1200 mg
- Acetyl-Glutathione⁵⁵ 400-1000 mg
- Alpha Lipoic Acid (ALA)⁵⁶ 300-1200 mg
- Coenzyme Q10⁵⁷ 400-800 mg
- Acetyl-l-carnitine⁵⁸ 500-3000 mg

- Biotin⁵⁹ 200-300 mg
- Citicoline⁶⁰ 500-3000 mg
- B12 (as methyl, adenosyl and hydroxocobalamin)^{61,62} 1000-5000 mcg
- Lipid Replacement Therapy⁶³ 3000-6000 mg
- Omega 3 & 6 essential fatty acids⁶⁴ 2000-6000 mg EPA/DHA, 600-1000 mg GLA
- Whole Coffee Fruit: 200 mg

Botanicals (short list)

- Curcuma longa⁶⁵ 1000-5000 mg, depending on the form
- Mucuna pruriens⁶⁶ 400-1000 mg, standardized to 15% L-Dopa (caution with those on L-Dopa agonist medications)
- Bacopa monnieri⁶⁷ 150-500 mg
- [Hericium erinaceus](#)^{68,69} 500-3000 mg
- Low Dose Naltrexone⁷⁰ 1.5-4.5 mg

This information is not a complete list, but more of an idea-starter of how to help patients with these truly devastating conditions.

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