

Strategy For Preventing Cognitive Decline

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One of the greatest fears that each of us harbor is the loss or decline of our cognitive abilities. New Research from the American Journal of Clinical Nutrition reminds us that choline is related to higher cognitive performance and even reduced white matter hyperintensity. White matter hyperintensity can be seen on MRIs and is associated with impaired cognitive function, an increased risk of stroke, dementia, Alzheimer's disease and death.

Choline is the precursor to the neurotransmitter acetylcholine. The 2011 Article Volume 94 looked at a population of nondemented individuals that were part of the Framingham Heart Study-Offspring. Results showed that higher levels of choline were related to better cognitive performances. More importantly participants with high choline levels showed reduced or no white matter hyperintensity.



1391 subjects, 744 women and 647 men, completed food frequency questionnaires from 1991 to 1995 and then again from 1998 to 2001. Participants took neuropsychological evaluations and MRIs at the end of the study. Performance on verbal memory and visual memory was better in the individuals who consumed higher levels of choline.

Animal studies have shown choline to be neuroprotective and prenatal supplementation affected memory

function in rats well into adulthood.

Choline metabolites are important for the structural integrity of cell membranes and for cholinergic transmission and signaling during the development of neuron cells. Dietary levels of choline from lecithin have been shown to elevate blood choline, brain choline and brain acetylcholine concentrations significantly. In scientific literature the term lecithin generally refers to phosphatidylcholine.

Autopsies of Alzheimer's patients show depleted levels of acetylcholine and choline in brain tissues. Adequate concentrations of acetylcholine in the brain are believed to be protective against certain types of dementia including Alzheimer's disease.

Choline is needed for myelination of nerves and supplies methyl groups for folate metabolism. Whenever you hear the words folate and methylation "think DNA repair." You can see why chronic low INTAKES of choline decrease memory in mammalian animal studies.

Let's look at an association that will give you one of those ah-ha moments. High homocysteine levels have been associated with reduced cognitive abilities and an increased risk for Alzheimer's disease. Most of us think deficiencies of B12, folate and B6 are a cause of high homocysteine concentrations. However, oxidized choline forms the methyl donor betaine which is also needed for the conversion of homocysteine to methionine which reduces homocysteine concentrations. This means that elevated levels of homocysteine can also be a result of a choline deficiency.

In the same token, if adequate choline levels are not available from the diet, the body kind of "cannibalizes" the amino acid L-methionine to produce choline. L-methionine supplies necessary methyl groups for the methylation reactions the body needs for life. L-methionine is also needed as a precursor to L-cysteine. L-cysteine is essential to produce glutathione and as a source of sulfur for phase II liver detoxification. So low levels of choline can cause depleted levels of methionine and eventually the methionine that is present can be become depleted as the body breaks down methionine for its methyl groups.

So how much choline is enough and how does that relate to average dietary intake? This is where the story gets good because the suggested amount is a mere 550 mg a day for adults. Yet according to a study performed by Iowa State University reported in the 2007 issue of The FASEB Journal, only 10% of people in the US consume adequate intakes of choline. This basic level of choline can be supplemented with 1 capsule of phosphatidylcholine per day. Each capsule yields 420 mg phosphatidylcholine. Veteran viewers know we have discussed this supplement relating to adrenal and liver support. See below for a more detailed discussion.

Higher doses can be used therapeutically but based on this article and common sense, low dose supplementation and increasing dietary choline in our non-demented days can be a highly effective strategy to prevent the loss of cognitive function later in life. These are the kinds of conversations we want to have with our patients.

When they know we care about their quality of life and how they function with their family members now and in the future, a relationship and a bond is created that will last far beyond acute care. I encourage you to take a few minutes and share these concepts with your patients.

It's an easy step to provide this basic building block we all need for healthy brain tissue and to sustain neuro integrity.

Thanks for reading this week's edition. I'll see you next Tuesday.