Helping Your Patients Prevent Mental Decline and Alzheimer's Disease As They Age

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As we age a number of factors predispose us to a decline in memory capacity and the development of more severe forms of cognitive decline, such as dementia and Alzheimer's disease. One of these factors is the lifetime accumulation of free radical damage to brain cells induced by the brain's high use of oxygen. The same way that oxygen in the air causes apples to rot or metal to rust, oxygen in the body damages our tissues in a similar fashion. The brain uses about 20% of the body's oxygen supply at any given moment to help brain cells metabolize blood sugar into energy, which enables brain cells to keep functioning. But the side effect is a build up of oxygen free radicals, which can damage brain cells and impair their function over time. Free radical events are a known factor in Alzheimer's disease and other forms of cognitive decline.

Of importance is the fact that some studies show that individuals who supplement with antioxidants (like vitamin C and vitamin E) have a lower incidence of Alzheimer's disease as they age. Thus, it may be wise to ensure that your patients get 1,000mg of vitamin C and 400IU of vitamin E per day from a high potency multiple vitamin. The high potency multiple vitamin and mineral should also contain a B-50 complex – as a number of B-vitamins are required to synthesize various of brain chemicals (neurotransmitters), which are essential to alertness, concentration and cognition in general. For instance, the synthesis of dopamine, serotonin, melatonin, epinephrine and nor epinephrine, all important neurotransmitters, require B-vitamins as co-factors for their synthesis.

A second way in which we are predisposed to memory loss as we age is the decline in synthesis of the memory chemical (neurotransmitter) acetylcholine, which really kicks in after age 54. As we age the brain is less able to make this important memory chemical, setting us up for memory loss and many of the manifestations of dementia and Alzheimer's disease. There appears to be a decline in the production of the enzyme that combines acetyl coenzyme A with choline, known as acetyl transferase. As such, the brain makes less acetylcholine and memory fails. In some cases, it is thought that the brain has trouble getting its hands on sufficient amounts of choline in order to make acetylcholine. In any case the good news is that there are several natural agents that have been shown in clinical studies to help the aging brain boost its production of acetylcholine, thereby helping to combat age-related decline in memory
The most important natural agents include:

- CDP-Choline (cytidine 5-diphosphocholine or citidinediphosphocholine or citicholine)
- Phosphatidylserine
- Bocopa Monnieri
- Huperzine A

CDP-Choline is a normal component of the nerve cell membrane, which is important for transmission of nerve impulses from one nerve to the next. It is also vital to the formation of the memory chemical acetylcholine. Unfortunately, the aging brain is less able to synthesize the CDP-Choline it requires. However, studies have shown that supplementation with CDP-Choline can re-constitute brain levels of CDP-Choline, boosting levels of several important brain neurotransmitters and improving nerve conduction ability.

These results translate into enhanced mental acuity and improvement in a number of disorders involving memory loss and cognitive decline.
Note that supplementing with most other forms of choline have not been shown to be effective. Therefore, you can not substitute lecithin or other forms of phosphatidylcholine in place of CDP-choline, as these forms don't appear to cross the blood-brain barrier as readily, and in clinical trials they have not shown benefit.

Phosphatidylserine – like CDP-Choline, Phosphatidylserine is a natural component of the nerve cell membrane, and it too, is a victim of age-related decline in synthesis. Studies show that supplementation with phosphatidylserine can also elevate brain levels of acetylcholine, and has been shown to improve memory and cognition in clinical trials with afflicted individuals.

Bacopa Monnieri - the leaf of Bacopa, or water hyssop, has been used in the Indian medical system of Ayurveda since the 6th century A.D. to help improve mental performance. Its active ingredients (bacosides A and B) have been shown to enhance nerve transmission and are potent antioxidants, which have been shown to protect brain cells from free radicals and other toxic substances. Human studies indicate that Bacopa Monnieri can preserve memory function and has been used in the treatment of various conditions involving memory loss.

Huperzine A - this natural substance was initially discovered within a club moss that grows in Asia, which has been used traditionally to aid memory loss problems. Since being isolated, Huperzine A is now synthesized for use in natural health products and has shown a remarkable ability to support brain levels of acetylcholine (the memory chemical). It does so by partially inhibiting the enzyme that breaks down acetylcholine (acetylcholinesterase), which results in higher acetylcholine brain

levels. Its positive effects on memory and brain function have been shown in a number of human clinical trials.

You Should Consider Recommending A Brain Support Supplement To Patients 55 and Older

Alzheimer's disease affects 6-8% of the population over 64 years of age and 47% of people who live to be 85 or older. Part of maintaining one's quality of life requires putting nutrition and lifestyle practices in place that maintain a highly functional body and "mind". Many wellness-striving individuals focus on preserving their bodies, and don't realize that their brain is also responsive to wellness interventions. Due to the fact that the aging process is associated with decreased synthesis of the memory chemical acetylcholine, as well as important phospholipids (CDP-Choline, Phosphatidylserine), which are required for optimal nerve impulse transmission, I suggest that patients begin ingesting a supplement at age 55 that can help combat memory loss and other related problems. Key ingredients in a memory support supplement include CDP-Choline, Phosphatidylserine, Bacopa Monnieri and Huperzine A. All of these have been shown to be safe, effective natural ingredients, when taken at appropriate dosages, and unlike Ginkgo Biloba and Vinpocetine, do not increase risk for bleeding disorders. The only caveat is that these supplements can not be used in conjunction with drugs commonly used to treat Alzheimer's disease.

One final note includes the fact that brain support nutrients of this type are best used in conjunction with an antioxidant/B-vitamin enriched Multiple Vitamin and Mineral Supplement as well as an Essential Fatty Acid Supplement containing borage seed, flaxseed and fish oil. Nutrients from these supplements have also been shown to support brain function and discourage the development of age-related cognitive decline problems, including Alzheimer's disease.

References:

Agnoli A, et al. New strategies in the management of Parkinson's disease: A biological approach using a phospholipid precursor (CDP-Choline) Neuropsycholbiology 1982;8(6):289-96

Canty DJ, et al. Lecithin and chloine in human health and disease. Nutr Reviews 1994;52:327-339

Citicoline, Alzheimer's disease, and cognitive performance. Life Extension 2000:6(9):69,2(Alt Health Watch data base)

Encyclopedia of Nutritional Supplements. Prima Publishing 1996;Murray M:137-141

Foiravanti M, Yanagi M. Cytidinediphosphocholine (CDP-Choline) for cognitive and behavioral disturbances associated with chronic cerebral disorders in the elderly. Cochrane Syst Revi 2002;(2):000269 In: The Cochrane Library, 1,2002. Oxford: Update Software

Present Knowledge in Nutrition (5th edition). The Nutrition Foundation, Inc 1984;Choline:383-399

Secades JJ, et al. CDP-Choline: pharmacological and clinical review. Methods Find Exp Clin Pharmacol 1995;17(Suppl B):1-54

Zeisel SH, et al. Choline,an essential nutrient for humans. FASEB J 1991;5:20093-2098

Cenacchi T, Bertoldin T, Farina C, et al. Cognitive decline in the elderly: A double-blind, placebo-controlled multicenter study on efficacy of phosphatidylserine administration. Aging 1993;5:123-33

Crook T, Petrie W, Wells C, Massari DC. Effects of phosphatidylserine in Alzheimer's disease. Psychopharmacol Bull 1992;28:61-6

Crook TH, Tinklenberg J, Yesavage J, Petrie W, Nunzi MG, Massari DC. Effect of phosphatidylserine in age-associated memory impairment. Neurology 1991;41:644-9

Engel RR, Satzger W, Gunther W, Kathmann N, Bove D, Gerke S, et al. Double-blind cross-over study of phosphatidylserine vs. placebo in subjects with early cognitive deterioration of the Alzheimer type. Eur. Neuropsychopharmacol, 1992;2:149-55

Funfgeld EW, Baggen M, Nedwidek P, Richstein B, Mistlberger G. Double-blind study with phosphatidylserine (PS) in parkinsonian patients with senile dementia of Alzheimer's type (SKAT). Prog Clin Biol Res 1989;317:1235-46

Maggioni M, Picotti GB, Bondiolotti GP, Panerai A, Cenacchi T, Nobil P, et al. Effects of phosphatidylserine therapy in geriatric patients with depressive disorders. Acta Psychiatr Scand 1990;81:265-70

Nunzi MG, Milan F, Guidolin D, et al. Effects of phosphatidylserine administration on age-related structural changes in the rat hippocampus and septal complex. Pharmacopsychiat 1989;22:125-8

Valzelli L, Kozak W, Zanotti A, Toffano G. Activity of phosphatidylserine on memory retrieval and on exploration in mice. Meth Find Extl Clin Pharmacol 1987;9:657-60

Vannucchi MG, Casamenti F, Pepeu G. Decrease of acetylcholine release from cortical slices in aged rats: Investigations into its reversal by phosphatidylserine. J Neurochem 1990;55:819-25

Dar A, Channa S. Calcium antagonistic activity of Bacopa monniera on vascular intestinal smooth muscles of rabbit and ginea-pig. J Ethnopharmacol 1999;66(2):167-74

Dietary Supplement Information Bureau. www.content.intramedicine.com: Bacopa monnieri

Kidd PM. A review of nutrients and botanicals in the integrative management of cognitive dysfunction. Altern Med Rev 1999 Jun;4(3):144-61

Mukherjee GD et al. Clinical trial on brahmi. I. J Exp Med Sci 1966;10(1):5-11

Stough C, Lloyd J, Clarke J, Downey LA, Hutchison CW, Rodgers T, et la. The chronic effects of an extract of Bacopa monniera (Brahmi) on cognitive function in healthy human subjects. Psychopharmacology (Berl) 2001 Aug;156(4):481-4

Tripathi YB, et al. Bacopa monniera linn. As an antioxidant: Mechanism of action. Indian J Exp Biol 1996 Jun;34(6):523-6

Vohora D, Pal SN, Pillai KK. Protection from phenbytoin-induced cognitive deficit by Bacopa monniera, a reputed Indian nootropic plant. J Ethnopharmacol 2000 Aug;71(3):383-90

Ashani Y, Peggins JO, Doctor BP. Mechanism of inhibition of cholinesterases by huperzine A. Biochem Biophys Res Commun, 1992:184:719-26

Bai DL, et al. Huperzine A, a potential therapeutic agent for treatment of Alzheimer's disease. Curr Med Chem, 2000 Mar;7(3):355-74

Cheng DH, Ren H, Tang XC. Huperzine A, a novel promising acetylcholinesterase inhibitor. Neuroreport 1996;8:97-101

Cheng DH, Tang XC. Comparative studies of huperzine A, E2020, and tacrine on behavior and cholinesterase activites. Pharmacol Biochem Behav 1998;60:377-86

Dworkin N. Restoring memory. Psychology Today 2000 Jul/Aug;32(4):p28

McCaleb R. Huperzia looks promising for improving memory. HerbalGram, 10/31/1995;35:p14

Pirisi, Angela. Plant wisdom: Memory moss. Yoga Journal, 08/31/1999;147:p95

Sun QQ, Xu SS, Pan JL, et al. Huperzine-A capsules enhance memory and learning performance in 34 pairs of matched adolescent students. Acta Pharmacol Sin 1999;20:601-3

Tang XC. Huperzine A (shuangyiping): A promising drug for Alzheimer's disease. Chung Kuo Yao Li Hsueh Pao, 1996 Nov;17(6):481-4

Wang Z, Ren G, Zhao Y et al. A double-blind study of huperzine A and piracetam in patients with age-associated memory impairment and dementia. In: Kanba S, Richelson E

(eds.) Herbal Medicines for Nonpsychiatric Diseases. Tokyo: Seiwa Choten Publishers 1999:39-50

Xu SS, Gao, ZX, Weng Z et al. Efficacy of tablet huperzine-A on memory, cognition, and behavior in Alzheimer's disease. Chung Kuo Yao Li Hsueh Pao 1995;16:391-5