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HAPS HAPPENINGS

APRIL 2003

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Parkinson's, B6, B12, and Folate – What's the Connection?

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In the past decade, there has been increasing interest among researchers about the effects of three B vitamins – B6, B12, and folate. We now know that deficiencies occur with greater frequency than ever suspected previously, particularly in older adults. We also now know that deficiencies, if not corrected, can result in irreversible damage in some people. Some health professionals are beginning to suspect that these three vitamins may be significant factors in Parkinson's disease.

What are B6, B12, and folate, and what do they do?

These are essential nutrients, meaning that they are vital to life. These three vitamins work both independently and together in many of the body's systems.

Vitamin B6 assists in making hormones, new proteins, and neurotransmitters ("messengers" between nerve cells) for the body's use. It also helps release stored sugar when we need it for fuel. It works together with B12 and folate to remove homocysteine from the blood. Homocysteine is a substance increasingly associated with a number of diseases; more about this later.

Vitamin B12 plays a role in the synthesis of DNA, needed for formation of new red blood cells. It takes part in the manufacture of the myelin sheath – the protective coating that surrounds nerve cells. With B6 and folate it removes homocysteine from the blood.

Folate, also called folacin or folic acid, is a partner with B12 in DNAsynthesis and in removal of homocysteine, and is required in many other vital processes. Without folate, B12 would be unable to complete many of its functions, and vice versa. Folate is the form found in foods, folic acid is the form in dietary supplements.

How much do we need of these vitamins?

Nutrient needs are broken down by gender, age group, pregnancy, and lactation. New guidelines have also established a Tolerable Upper Intake Level. So, for example, while the RDA for vitamin B6 for males and females age 19-30 years is 1.3 mg/day, the Tolerable Upper Intake Level for both is 100 mg/day, making it easier to provide recommended amounts.

RDA* Tolerable Upper Intake Level ** +
Vitamin B6*** + 1.7 mg/day 100 mg/day
(age 19 and older)

Vitamin B12 + 2.4 mcg/day Not Determined
Folate + 400 mcg/day 1000 mcg/day

* Recommended Dietary Allowance

** The Tolerable Upper Intake Level is the maximum level of daily nutrient intake that is likely to pose no risk of adverse effects, and represents the total intake from food, water, and supplements.

*** Adults age 51 and older

+ not applicable if pregnant or lactating.

(Continued on next page)

Parkinson's, B6, B12, and Folate...Continued

Why do deficiencies occur, and what are signs of deficiencies?

VITAMIN B6. Mild deficiencies of B6 are fairly common in the U. S., mostly because of dietary deficiencies, but sometimes due to use of certain medications which interfere with B6, including hydralazine, isoniazid, MAO inhibitors, penicillamine, and theophylline. (Conversely, large amounts of B6 can interfere with the absorption of levodopa, an important medication for Parkinson's disease. Current use of the combinations of carbidopa-levodopa or benserazide-levodopa offset this interaction for the most part; but use of supplements containing more than 15 mg of B6 can overwhelm the protective effects of the carbidopa and benserazide.)

Good food sources of B6 include chicken, fish, eggs, nuts and seeds, dried beans and peas, soybeans, wheat germ, bananas, avocados, and brewer's yeast. Also, some foods, including a number of breakfast cereals, are fortified with B6.

Signs of B6 deficiency include irritability, depression, and confusion; sore tongue, sores or ulcers of the mouth, and ulcers of the skin at the corners of the mouth.

VITAMIN B12. The human body stores this vitamin so well that it can take a long time to deplete, sometimes several years. Nevertheless, there are several reasons why people sometimes do experience deficiency. Animal foods are the only source of B12, therefore people who eat few or no animal products (meat, fish, poultry, eggs, milk) are at risk unless they use vitamin supplements.

Another problem is that B12 in foods cannot be absorbed by the body until it is freed from the proteins in the food; the stomach produces an acid that removes this protein. However, with age, we produce less and less of this stomach acid. Many older adults don't produce enough acid to allow them to absorb B12. Further, people who have acid reflux often use medications that reduce stomach acid, which unfortunately also decreases absorption of B12. Vitamin B12 is one of the few nutrients that is better absorbed in pill form than from dietary sources.

Signs of B12 deficiency include numbness or a tingling "pins and needles" sensation, or a

burning feeling; a red, sore, or burning tongue; loss of appetite; gait abnormalities, personality changes, an Alzheimer-like dementia, psychosis, depression and agitation, particularly in older adults. Other signs are megaloblastic anemia, and elevated serum homocysteine, in people of all ages. Researchers believe that as many as 42% of people aged 65 and older may have some degree of B12 deficiency. Many people with PD are age 65 or older, and should be considered at risk and tested for B12 deficiency.

FOLATE. Folate is available in many foods: lima beans, brewer's yeast, orange juice, dried beans, green peas, asparagus, beets, Brussels sprouts, broccoli, corn, spinach and other dark green leafy vegetables, soybeans, nuts and seeds. Further, the U. S. government requires that food manufacturers fortify processed grain products with folic acid. Yet, deficiencies of folate are not uncommon. This could be in part because folate is another of the few nutrients in which the synthetic form is absorbed much better (about 40 percent better) than the natural form.

Because of the possibility of deficiency, women, including women with PD, who are pregnant or wish to become pregnant are advised to take supplements of folic acid; deficiencies can result in neural tube defects in the unborn child.

Deficiencies of folate are also being increasingly studied for a possible role in other diseases:

- A low intake of folic acid is associated with risk for colon cancer. Chronic constipation, experienced by many people with PD, also increases risk for colon cancer; it is prudent for those with PD to control constipation and to be sure the diet is adequate in folate.

- A low level of folic acid in the blood is associated with higher levels of serum homocysteine, a substance in the blood that may contribute to heart disease, stroke, and dementias.

- Animal studies point to a link between low levels of folic acid and Alzheimer's disease; and people with Alzheimer's are often found to have low levels of folic acid. Some people with PD develop an Alzheimer-type dementia. Again, prudence dictates consumption of adequate folate.

- Another study using mice found that folic acid deficiency led to increased levels of homocysteine and symptoms of Parkinson's disease. Researchers speculate that homocysteine may damage DNA in the substantia nigra, the area of the brain affected in Parkinson's disease.

- There are reports of improvement in restless leg syndrome (RLS) with use of folate supplements; this has not as yet been studied thoroughly, so it is too early to say whether there is a definite link. However, people with PD often complain of RLS, and physicians should rule out the possibility of folic acid deficiency. Signs of folic acid deficiency include appetite loss, weight loss, burning tongue, fatigue, weakness, shortness of breath, memory loss, irritability, megaloblastic anemia, and increased levels of serum homocysteine.

Should people with PD be concerned about these vitamins?

Yes. If you are over age 50 these vitamins are of importance independently of PD. Furthermore, studies have demonstrated that some people who use levodopa, considered the best medication for PD, develop elevated levels of serum homocysteine, due to the way in which the medication is metabolized. Everyone with PD should be aware of the signs of B vitamin deficits, and should be on guard against the possibility. Also, ask your doctor to test levels of serum homocysteine annually, and to check for signs of B vitamin deficiencies.

Should you take supplements?

There is growing agreement that older adults are at risk for nutrient deficiency, whether PD is present or not, and that supplements can help.

- One study of older adults found that a multivitamin containing 100% of the Daily Value improved low levels of several nutrients, including vitamins B6, B12, and folate.

- A recent study in the United Kingdom suggests that folic acid intake should be about three times that of the current recommendation for elderly people.

- Other studies indicate that up to 10% of older adults with low-normal levels of B12 are actually deficient and could benefit from supplements. Because folate supplements can mask a B12 deficiency, it becomes extra important to get enough B12 daily.

- The American Heart Association recommends a folate-rich diet to lower homocysteine levels, and supplements of 2 mg B6, 400 mcg folic acid, and 6 mcg of B12 if dietary means are not sufficient to lower the homocysteine.

For people with PD who use a medication that contains levodopa (such as Sinemet, Madopar, Syndopa, Larodopa, etc.), you should be aware that large amounts of vitamin B6 (more than 15 mg) can affect the absorption of levodopa, by converting levodopa to dopamine in the stomach and bloodstream. Dopamine cannot cross the blood-brain barrier, so it is effectively blocked from its purpose.

Sinemet and Madopar contain either carbidopa or benserazide, which "protect" the levodopa from B6; so ordinary supplements of B6 should not be a problem for most people. However, very large amounts of B6, greater than 15 mg (and in sensitive persons, possibly as low as 10 mg), could overwhelm the protective effects of the carbidopa or benserazide. Such a supplement should be taken at bedtime with a light snack, or with meals at least two hours separately from levodopa.

In summary, older adults are acknowledged to be at increased risk for B vitamin deficiencies. People with PD who are age 50 and over, therefore, are automatically at increased risk. Younger people with PD should be cautiously concerned about such deficiencies, particularly if using levodopa. A prudent and rational approach for all those with PD is to:

- Discuss the possibility of B vitamin deficit with their physicians, and to request tests for B vitamin deficiencies.
- Be aware of the signs of B vitamin deficiency.
- Take a multivitamin/mineral supplement daily. Unless anemic, choose a supplement that does not contain iron.
- Take a B complex supplement if deficiencies occur; and take the supplement separately from levodopa by at least two hours, preferably with meals or a snack.

Knowledge is strength; awareness of dietary needs can prevent illness, malnutrition, suffering, and hospitalization. If you have questions about B vitamins or other nutrition or dietary needs, please visit the National Parkinson Foundation website: <<http://www.parkinson.org> and click on "Ask the Parkinson Dietitian."

When Silence is NOT Golden

"It was one of those life defining moments. We're all familiar with them: a child's birth, a loss of a loved one, the day you take your marriage vows. Mine came as I watched the neurologist write notes on the newly prepared medical chart. Peering over his eyeglasses, he said, 'Mr. Bowers, your condition is progressive, degenerative and as yet incurable. It is known as Parkinson's disease.'"

You, your children or grandchildren might be faced with words similar to those heard by Terry Bowers, the Texas Grassroots Coordinator for the Parkinson's Action Network. Last month we talked about the need to make your voices heard at the national level. We also have an opportunity to make a difference at the state level. This is a time when silence is not golden!

There are bills before the Texas House and Senate which call for a ban on *all* forms of human cloning, which would include both reproductive (which seeks to create babies) and therapeutic cloning, also called somatic cell nuclear transfer (which seeks to produce stem cells to cure disease.)

Most of us are opposed to human reproductive cloning, but somatic cell nuclear transfer is about saving and improving lives. It is fundamentally different from human reproductive cloning; it produces stem cells, not babies. In somatic cell nuclear transfer, the nucleus of a donor's unfertilized egg is removed and replaced with the nucleus of a patient's own cells, like a skin, heart or nerve cell. These types of cells are called somatic cells. The goal is to develop stem cells that will not be rejected or destroyed by the patient's immune system. No sperm is used in this procedure. The cells are not transplanted into a womb. The unfertilized egg cells are stored in a petri dish to become a source of stem cells that can be used to treat life-threatening medical conditions.

Somatic cell nuclear transfer aims to treat or cure people by creating tailor-made, genetically identical cells that their bodies won't reject. In other words, somatic cell nuclear transfer could allow people with diseases and conditions like Parkinson's, cancer, diabetes, ALS, spinal cord injuries and many more to be cured using their own DNA.

As you try to decide whether you will take the time and make the effort to learn how you can help, remember that 3,000 people are dying every day of diseases that might be cured by research that may be banned by our government. Terry Bowers will be in town to speak about how *YOU* can take an active role in Advocacy and Awareness. This is a meeting you shouldn't miss!

The Parkinson Forum
Saturday, May 3, 2003
10:00 am – 12:00 noon



Tracy Gee Community Center
3599 Westcenter
(East of Beltway 8, between
Richmond Ave. and Westpark)

CORRECTION on MEMORY STUDY PHONE NUMBER

IF YOU WANT TO VOLUNTEER FOR THE MEMORY STUDY CONDUCTED BY BAYLOR COLLEGE OF MEDICINE AND RICE UNIVERSITY, CALL LINGO LAI AT THIS CORRECTED PHONE NUMBER: 713-348-1619.

TAXING TIMES...

- ☹ *There will always be death and taxes; however, death doesn't get worse every year.*
- ☹ *The only thing that hurts more than having to pay income tax is **not** having to pay income tax.*

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- your donation is much appreciated -

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GREETINGS AND GOODBYES ~ HAPS BOARD OF DIRECTORS

HAPS is delighted to welcome the following enthusiastic new members to the Board of Directors: Jason Bitsoff, John "Pete" Hawkins, Quin and Marti McWhiter, Dr. Terry Satterwhite and Rev. Terry Thompson. Ambassador Arthur Schechter, Joyce Proler Schechter, Bill Neuhaus and Marion Rosenwald accepted positions to the Advisory Board. HAPS looks forward to their leadership and innovative ideas. A sad goodbye to Faulk Landrum, who moved to another city and had to resign.

MEET YOUR NEW BOARD MEMBERS

Let me introduce
myself...



I'm Quin McWhirter and I'm looking forward to being involved as a new member of the HAPS board.

Three years ago, I retired as a department head at HL&P, now called CenterPoint Energy, after spending 38 years with the company. It was a wonderful career, working in departments ranging from customer service to Organizational development. I learned so much about the importance of meeting the needs of people and giving back to the community.

My interest in HAPS began last year when I worked with Aubrey Calvin on our Rice Class of '62 40th reunion committee. I learned of Aubrey's history with Parkinson's and was amazed at it's effect on people, and how HAPS could provide so much support with such limited funds. My mother also had Parkinson's Plus, but it was very late in her life and was not a major contributor to her death.

I've been blessed in my life with a wonderful family, and am excited that my wife, Marti, is also joining the HAPS board with me. She's an incredible person with medical experience and is the best caregiver I've ever known. I'm blessed with two daughters and a stepson, and three grandchildren, all living in the Houston area. Music is my hobby. I've been a member of a band called the "Goose Creek General Store" for 30 years, and play regularly at my church, St. John the Divine Episcopal in Houston.

There is so much for me to learn about Parkinson's and I'm glad to be in a position now to do it, and hopefully to be a part of providing meaningful support to Parkinsonians and to finding a cure.

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HAPS HAPPENINGS is published monthly
by the Houston Area Parkinson Society
Editor: Nina P. Brown