

LE Magazine July 2004

IN THE NEWS

Secondhand Smoke Raises Heart Disease Risk



Although cigarette smoking remains the leading cause of preventable deaths in the US, claiming some 440,000 Americans each year, approximately 25% of adult men and 20% of adult women in the US continue to smoke.

While cigarette smoking is known to increase the risk of a heart attack, secondhand smoke (or environmental tobacco smoke) also increases the risk of a heart attack by about 30%.¹ For those continually exposed to environmental tobacco smoke in the home or workplace, the risk of heart attack doubles. In fact, of the 40,000 annual deaths attributable to environmental tobacco smoke, 35,000 result from heart disease. The American Heart Association estimates that some 90% of nonsmokers are routinely exposed to environmental tobacco smoke.

Within minutes of exposure to cigarette smoke, the capacity of the blood vessels that nourish the heart is impaired, the aorta stiffens, normal heart rate variability is reduced, and antioxidant efficacy is decreased. Within 30 minutes of exposure, secondhand smoke causes an increase in platelet clumping and damages the lining of blood vessels, increasing the risk of heart attack and stroke.²

In June 2002, the city of Helena, MT, enacted a public smoking ban based on an analysis of hospital admissions data for a six-month period during which a public smoking ban was enforced.³ In a sample comprising smokers, nonsmokers, and former smokers in roughly equal percentages, hospital admissions due to myocardial infarction declined 40% during the six-month period.

This landmark study demonstrated for the first time the immediate benefits of protection from environmental tobacco smoke and may provide the impetus for universal smoke-free environments in public areas.

—Dean S. Cunningham, MD, PhD

References

1. He J, Vupputuri S, Allen K, Prerost MR, Hughes J, Whelton PK. Passive smoking and the risk of coronary heart disease—a meta-analysis of epidemiologic studies. *N Engl J Med*. 1999 Mar 25;340(12):920-6.
2. Glantz SA, Parmley WW. Passive smoking and heart disease. Mechanisms and risk. *JAMA*. 1995 Apr 5;273(13):1047-53.
3. Sargent RP, Shepard RM, Glantz SA. Reduced incidence of admissions for myocardial infarction associated with public smoking ban: before and after study. *BMJ*. 2004 Apr 5. [Epub ahead of print.]

DHEA Shown to Boost Brain Cell Growth



Dehydroepiandrosterone (DHEA) is one of the most active and plentiful circulating hormones in both men and women. DHEA levels peak, however, around the age of 30, then decline by as much as 80% by the age of 80. As a result, many anti-aging researchers recommend supplemental DHEA as a way to forestall many of the deleterious effects of aging, such as decreased libido, muscle mass, and brain function.

A newly published study sheds light on how DHEA may increase brain function.

Researchers at the University of Wisconsin found that DHEA boosts brain cell growth.* When DHEA was added to human neural stem cells, these embryonic brain cells showed a remarkable increase in their growth rate. These findings, published in the Proceedings of the National Academy of Sciences USA, offer the first direct proof of DHEA's beneficial effect on human brain cells.

Study director Dr. Clive Svendsen and his colleagues grew human neural stem cells in culture and then exposed the cells to either a mixture of DHEA, growth factors, and inhibitory factors or a mixture of the growth and inhibitory factors minus DHEA. The cells exposed to the mixture containing DHEA demonstrated a 29% increase in new brain cells compared to the mixture without DHEA.

The researchers noted that DHEA was the only hormone tested that had such a direct effect on neural stem cell growth and new neuron formation. Since adult human brains have neural stem cells that continue to make new neurons in some parts of the brain, this study may point to one way in which DHEA works as anti-aging supplement.

—Edward R. Rosick, DO, MPH, MS

Reference

* Suzuki M, Wright LS, Marwah P, Lardy HA, Svendsen CN. Mitotic and neurogenic effects of dehydroepiandrosterone (DHEA) on human neural stem cell cultures derived from the fetal cortex. Proc Natl Acad Sci USA. 2004 Mar 2;101(9):3202-7. Epub 2004 Feb 18.

Fruits and Vegetables Cut Non-Hodgkin's Lymphoma Risk

Diets that are high in fibrous fruits and vegetables such as tomatoes, broccoli, and cauliflower reduce the risk of developing non-Hodgkin's lymphoma, according to Yale University researchers. Conversely, consuming foods that are high in animal protein, saturated fat, eggs, and dairy products leads to an increased risk of developing the disease. Non-Hodgkin's lymphoma is a cancer that attacks the lymphatic system, part of the body's immune system.

"An association between dietary intake and [non-Hodgkin's lymphoma] is biologically plausible because diets high in protein and fat may lead to altered immunity, resulting in increased risk of [non-Hodgkin's lymphoma]," said principal investigator Tongzhang Zheng, MD. "The antioxidants found in vegetables and fruits may result in reduced risk of about 40%."

The study was conducted between 1995 and 2001 on 601 Connecticut women aged 21 to 84 who were diagnosed with varying subtypes of non-Hodgkin's lymphoma. Each participant was asked to complete a questionnaire characterizing her usual diet in the year prior to being interviewed. After completion, the questionnaires were analyzed to calculate average daily nutrient intakes. Results were compared to a control group of 717 women.

"So far, risk of [non-Hodgkin's lymphoma] associated with animal protein and fat intakes has only been investigated in American women, in three studies," said Zheng. "If the association could also be demonstrated in American men, it would provide important information towards understanding the cause of [non-Hodgkin's lymphoma]."

Reference

* Zheng T, Holford TR, Leaderer B, et al. Diet and nutrient intakes and risk of non-Hodgkin's lymphoma in Connecticut women. Am J Epidemiol. 2004 Mar 1;159(5):454-66.

Vitamin D Deficiency More Common than Thought

Aside from sources such as cod liver oil and oily fish such as salmon, vitamin D is hard to come by in the diet. This is partly why milk, orange juice, and some cereals are fortified with vitamin D.

While many people are able to satisfy their vitamin D requirements through dietary intake and intermittent exposure to sunlight, a

vitamin D deficiency during growth and development causes rickets. A similar deficiency during adulthood may lead to secondary hyperparathyroidism, which in turn gives rise to osteoporosis. Vitamin D deficiency also is associated with an increased risk of prostate, colon, breast, and other cancers, as well as multiple sclerosis and high blood pressure.

Once considered rare, vitamin D deficiency is in fact quite common. Breastfed infants, the elderly, the obese, and even otherwise healthy young adults are known to be at risk. Indeed, in one Boston-based study, up to 84% of the elderly subjects were vitamin D deficient.¹ In another Boston-based study, 32% of healthy adults under the age of 30 were shown to be vitamin D deficient.²

Vitamin D deficiency is properly assessed by serum 25(OH)D levels and should be measured annually. To optimize health and reduce the risk of these common diseases, the ideal value for 25(OH)D is 30-40 ng/ml.³ For those with adequate exposure to the sun, a vitamin D-containing multivitamin and a vitamin D supplement (containing either 400 or 1000 IU) are recommended. Those without adequate exposure to sunlight should take 1000 IU of vitamin D daily.

—Dean S. Cunningham, MD, PhD

References

1. Holick MF. Vitamin D: the underappreciated D- lightful hormone that is important for skeletal and cellular health. *Curr Opin Endocrinol Diabetes*. 2002;9:87-98.
2. Tangpricha V, Pearce EN, Chen TC, Holick MF. Vitamin D insufficiency among free-living healthy young adults. *Am J Med*. 2002 Jun 1;112(8):659-62.
3. Holick MF. Vitamin D: importance in the preven- tion of cancers, type 1 diabetes, heart disease, and osteoporosis. *Am J Clin Nutr*. 2004 Mar;79(3):362-71.

IN THE NEWS

Low Magnesium Tied to Diabetes Risk

Magnesium plays a vital role in the storage and utilization of energy. Although magnesium is ubiquitous in food sources, especially in dark green leafy vegetables, magnesium deficiency continues to be common, affecting up to 10% of seemingly healthy adults and up to 65% of patients in the intensive care setting.¹ Moreover, a new study strongly correlates high magnesium intake with a reduced risk of developing type II diabetes.²

Of those with type II diabetes, approximately 39% suffer from magnesium deficiency.^{3,4} This reduces insulin sensitivity, thereby altering glucose homeostasis. Furthermore, magnesium deficiency accelerates the complications of diabetes, including retinopathy, thrombosis, and hypertension.

This deficiency generally is not due to inadequate dietary intake, but instead to excessive gastrointestinal losses (from malabsorption, diarrhea, or bowel resection) or renal losses (for example, hypercalcemia, alcohol abuse, or the use of diuretics, chemotherapeutic agents, or antibiotics). Magnesium deficiency also occurs as a metabolic derangement of both thyroid and parathyroid disorders, and most often is a symptom of an underlying disease.

In research published in the journal *Diabetes Care*, low magnesium intake in women was tied to an increased risk of developing diabetes, particularly in those who are overweight.² Women with the highest magnesium intake (433 mg/day) were up to 22% less likely to develop diabetes than those with the lowest intake (255 mg/day).

Although people with low-normal or even abnormally low levels of magnesium may be asymptomatic, the classic symptoms of magnesium deficiency are neuromuscular hyperirritability and cardiac arrhythmias. Magnesium status can be easily determined by a blood test or magnesium tolerance test. For those who are asymptomatic or mildly symptomatic, oral replacement with magnesium oxide (1-2 grams daily in divided doses) is recommended.

—Dean S. Cunningham, MD, PhD



References

1. Ryzen E, Wagers PW, Singer FR, Rude RK. Magnesium deficiency in a medical ICU population. *Crit Care Med*. 1985 Jan;13(1):19-21.
2. Song Y, Manson JE, Buring JE, Liu S. Dietary magnesium intake in relation to plasma insulin levels and risk of type 2 diabetes in women. *Diabetes Care*. 2004 Jan;27(1):59-65.
3. Walti MK, Zimmermann MB, Walczyk T, Spinaz GA, Hurrell RF. Measurement of magnesium absorption and retention in type 2 diabetic patients with the use of stable isotopes. *Am J Clin Nutr*. 2003 Sep;78(3):448-53.
4. Barbagallo M, Dominguez LJ, Galioto A, et al. Role of magnesium in insulin action, diabetes and cardio-metabolic syndrome X. *Mol Aspects Med*. 2003 Feb-Jun;24(1-3):39-52.

Women with High Iron at Risk for Diabetes



Could a simple blood test determine your risk of developing diabetes in the future? Doctors may one day be able to identify patients at risk by checking their stored iron levels.

A recent study published in the Journal of the American Medical Association (JAMA) found that women with above-average stored iron levels (as measured in the blood by both the concentration of transferrin receptors to concentration of ferritin and the concentration of ferritin alone) were at risk of developing type II diabetes.* The 10-year study tracked the health status of more than 38,000 women who donated blood samples. Of

this group, 698 women were diagnosed with type II diabetes. On average, the diabetic women had higher indicators of stored iron levels than those who were not diagnosed with the disease.

The JAMA study found that the risk for developing diabetes was almost three times greater in those with the highest blood ferritin levels compared to those with the lowest levels. Ferritin is a crystalline iron-containing protein that indicates the amount of iron in the body. Normal ferritin levels for women range from 12 to 150 ng/ml. In the JAMA study, the average ferritin level in those who developed diabetes was 109 ng/ml compared to 71.5 ng/ml for those who did not develop diabetes.

Many people with type II diabetes often have no symptoms or have symptoms so mild that they may not notice them until the onset of complications. According to the American Diabetes Association, 16 million Americans have type II diabetes, but up to one-third of them are not even aware that they have the disease. Using blood tests to identify those at risk for diabetes may be helpful in facilitating preventive measures such as diet and lifestyle changes to avoid onset of the disease.

—Linda Robison



Reference

* Jiang R, Manson JE, Meigs JB, Ma J, Rifai N, Hu FB. Body iron stores in relation to risk of type 2 diabetes in apparently healthy women. JAMA. 2004 Feb 11;291(6):711-7.

Lycopene Helps Women Avoid Heart Disease

Heart disease is the number-one killer of women, responsible for nearly twice as many deaths of US women as all forms of cancer and strokes. Recent studies have found that lycopene, a powerful carotenoid and antioxidant found in foods such as tomatoes, can significantly reduce a woman's chances of developing heart disease.

One widely publicized study, led by Dr. Howard Sesso of the Harvard School of Public Health, followed nearly 40,000 women over an 11-year period.¹ The study found that women who consumed seven or more servings of foods high in lycopene, such as tomatoes (and even tomato sauce and pizza), reduced their risk of developing heart disease by 30% compared to a similar group of women who ate less than 1.5 servings per week of lycopene-rich foods.

In a more recent follow-up study, 483 women were identified as having significant heart disease.² After comparing these women with 483 women who did not have heart disease, it was shown that blood lycopene levels were significantly correlated with the risk of developing heart disease. Women with the highest amounts of blood lycopene were found to have a 34% lower risk of developing heart disease.

The study authors concluded: "higher plasma lycopene concentrations are associated with a lower risk of [cardiovascular disease] in women."

—Edward R. Rosick, DO, MPH, MS

References

1. Sesso HD, Liu S, Gaziano JM, Buring JE. Dietary lycopene, tomato-based food products and cardiovascular disease in women. J Nutr. 2003 Jul;133(7):2336-41.

2. Sesso HD, Buring JE, Norkus EP, Gaziano JM. Plasma lycopene, other carotenoids, and retinol and the risk of cardiovascular disease in women. Am J Clin Nutr. 2004 Jan;79(1):47-53.

These statements have not been evaluated by the FDA. These products are not intended to diagnose, treat, cure or prevent any disease. The information provided on this site is for informational purposes only and is not intended as a substitute for advice from your physician or other health care professional or any information contained on or in any product label or packaging. You should not use the information on this site for diagnosis or treatment of any health problem or for prescription of any medication or other treatment. You should consult with a healthcare professional before starting any diet, exercise or supplementation program, before taking any medication, or if you have or suspect you might have a health problem. You should not stop taking any medication without first consulting your physician.