

Health Bits and Pieces, Summer 2014 (HFN 32:2)

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Statins, Pain, and Injury

The use of statins appears to be associated with an increased risk of dislocations, strains, and sprains, according to a study in Texas on American military personnel. Treatment with a statin was associated with a 19% increased risk of any type of musculoskeletal injury, a 13% increased risk of dislocations, strains, and sprains, and a 9% increased risk of musculoskeletal pain. The study included 6967 statin users propensity-matched with 6967 non-statin-users. “These findings are concerning because starting statin therapy at a young age for primary prevention of cardiovascular diseases has been widely advocated,” report Dr Ishak Mansi (VA North Texas Health Care System, Dallas) and colleagues. The risk of osteoarthritis and other joint problems was increased in two analyses that first adjusted for and then excluded patients with existing comorbidities. Researchers observed no association between the number of years an individual took a statin drug and the risk of musculoskeletal injuries.

Mansi I, Frei C, Pugh M, Makris U, Mortensen E, “Statins and musculoskeletal conditions, arthropathies, and injuries,” Journal of the American Medical Association Internal Medicine 2013; DOI:10.1001/jamainternmed.2013.6184. Available at: <http://archinte.jamanetwork.com/journal.aspx>.

Broccoli and Pollution

A chemical component of broccoli appears to help protect the body from environmental pollution. A team of American and Chinese researchers working with the Johns Hopkins Bloomberg School of Public Health recruited 291 study participants in rural He-He Township, in the Yangtze River delta region of China, a region with high levels of airborne pollutants. Urinary excretion of the mercapturic acids of the pollutants, benzene, acrolein, and crotonaldehyde were measured before and during ingestion of a broccoli sprout-derived drink. Broccoli contains a substance called glucoraphanin, which metabolizes into sulforaphane when the vegetable is chewed or swallowed in a beverage. Hundreds of journal publications and epidemiological evidence show that diets rich in broccoli have numerous health benefits. Sulforaphane increases the activity of enzymes that accelerate the body's ability to discharge pollutants. Subjects in the study released significantly high levels of benzene and acrolein in the urine. There was a 61% increase in the rate of excretion of the carcinogen benzene from day one and continuing over the subsequent 12-week period.

Kensler T, et al., “Rapid and Sustainable Detoxication of Airborne Pollutants by Broccoli Sprout Beverage: Results of a Randomized Clinical Trial in China,” Cancer Prevention Research, doi: 10.1158/1940-6207.CAPR-14-0103, published online June 9, 2014.

B for the Brain

A combination of B vitamins (folic acid, B₆, and B₁₂) and the Mediterranean diet appear to improve mild cognitive impairment (MCI) and the Mediterranean diet probably decreases the

risk of Alzheimer's disease (AD). A team of researchers led by Richard S. Isaacson, M.D., Associate Professor of Neurology at Weill Cornell Medical College in New York, New York, and Hilary P. Glazer, M.D., a resident in the Department of Neurology at the University of Miami Miller School of Medicine systematically reviewed all studies published since 2002 about dietary interventions to both treat, as well as reduce risk for, MCI and AD. They used American Academy of Neurology guidelines to classify the quality of each study, many dozens of studies, including randomized controlled trials (RCTs) and prospective cohort studies, that evaluated various dietary interventions in normal, nondemented persons; patients with MCI; and patients with AD and then summarized the evidence for each dietary intervention. They reviewed interventions including the Mediterranean diet, omega-3 fatty acids, antioxidants, B vitamins, and low-carbohydrate diets.

They found that specific omega-3 fatty acids are likely to decrease cognitive impairment in MCI, and flavonoids (found in blueberries and strawberries) may delay the onset of symptoms. Alzheimer's disease often starts in the brain 20-30 years before the first symptoms of memory loss. A nutritional approach could be one of the most effective ways of risk management and prevention.

Glazer H, Greer C, Barrios D, et al., "Evidence on diet modification for Alzheimer's disease and mild cognitive impairment," Program and abstracts of the 66th Annual Meeting of the American Academy of Neurology; April 26-May 3, 2014; Philadelphia, Pennsylvania. Abstract P5.224.

Magnetism for Depression

Results of a multicenter observational study showing that acute Transcranial Magnetic Stimulation (TMS) induced a "statistically and clinically meaningful response and remission" in patients with major depressive disorder were presented at the American Psychiatric Association's 2013 Annual Meeting.

Four university hospital clinics selected 199 antidepressant-free patients with non-psychotic major depressive disorder screened from 860 outpatients. Participants in the study underwent 3 weeks of daily weekday treatment with TMS at the left prefrontal cortex of the brain for 37.5 minutes followed by continued blinded treatment for up to another 3 weeks in improvers. Daily left prefrontal TMS as a single therapy produced a statistically significant and clinically meaningful antidepressant therapeutic effect greater than sham. The results were still maintained at 52 weeks.

"This is the first study to examine 12-month outcomes of TMS in a large data set in a real-life setting. We have data on 257 patients that got all the way through the long-term follow-up, and we found that 68% improved and 45% had complete remission at 1-year follow-up," study investigator Linda L. Carpenter, M.D., professor at the Department of Psychiatry and Human Behavior, Brown University School of Medicine, and chief, Mood Disorders Program, Butler Hospital, in Providence, Rhode Island.

George M, Lisanby S, Avery D, McDonald W, et al., "Left Prefrontal Transcranial Magnetic Stimulation Therapy for Major Depressive Disorder – A Sham-Controlled Randomized Trial," Archives of General Psychiatry, 2010;67(5):507-516. doi:10.1001/archgenpsychiatry.2010.46.

Nighttime High Blood Pressure – a Major Risk Factor

An analysis of over 13,000 patients reveals that blood pressure measured in a clinic had no connection with the risk of pathological cardiovascular outcomes, including myocardial infarction and stroke. Nighttime blood pressure, however, *was* associated with a risk of adverse clinical outcomes. For every 10-mm-Hg increase in nighttime systolic blood pressure, the risk of cardiovascular disease was increased 25% according to Dr. George Roush of St Vincent's Medical Center, Bridgeport, Connecticut. He said that despite being able to measure daytime and nighttime blood pressure, even with 24-hour ambulatory blood-pressure monitoring (ABPM) for more than 30 years, as well routinely taking measurements in clinics, it is still not known what reading is best for predicting clinical outcomes. Since it has been suggested that nighttime blood pressure could be the most accurate predictor of negative clinical events, an investigative study was carried out to examine this possibility.

Individually, each 10-mm-Hg increase in blood pressure assessed during nighttime, daytime, and clinic was associated with a 25%, 20%, and 11% increased risk of myocardial infarction or stroke, respectively. After adjusting for patient-specific variables, including age, sex, diabetes, tobacco use, and drug treatment, only the nighttime blood-pressure measurement retained its significance as a predictor of myocardial infarction or stroke. Unfortunately, “Every practical clinical decision we make is based on clinic blood pressure, yet it's the least predictive of all three,” according to Roush.

Dr. Roush explained that sympathetic nervous system tone normally decreases at night. If the sympathetic tone is too high at night it could explain the increased stroke and heart attack risk. It could be that elevated nighttime blood pressure is just a marker for elevated sympathetic tone, among other possible explanations.

Roush G, Fagard R, Salles G, et al., “Prognostic impact of clinic, daytime, and nighttime systolic blood pressure in 9 cohorts of 13,843 patients with hypertension: systematic review and meta-analysis,” Journal of the American Society of Hypertension, 2014; 8:e59.

Fluoride and Brain Decay

Industrial chemicals are a known cause in injuring the developing brain. Based upon the effects of fluoride on nervous-system development, fluoride was recently added to the 2006 list of neurotoxins. A meta-analysis of previously recorded data shows that children living in high-fluoride areas had significantly lower IQ scores than those living in low-fluoride areas. This supports the possible correlation between fluoride intake and nervous-system development in children. According to one study, children living in what is termed a “fluorosis” area are five times more likely to develop a low IQ, as compared to children who live in a “non-fluorosis” or “slight fluorosis” area.

Tang Q, Du J, Ma H, Jiang S, Zhou X, “Fluoride and children's intelligence: a meta-analysis,” Biological Trace Element Research 2008 Winter; 126(1-3):115-20. doi: 10.1007/s12011-008-8204-x. Epub 2008 Aug 10.

Since fluoride crosses the placenta, and the developing brain is more vulnerable to injury by toxins than the adult brain, fluoride exposure can potentially lead to permanent brain damage. (See *Agency for Toxic Substances and Disease Registry. Toxicological Profile for Fluorides,*

Hydrogen Fluoride, and Fluorine [Update], 2003.) Neurobehavioral problems like autism, attention-deficit hyperactivity disorder, dyslexia, or other cognitive impairments seem to be on the rise worldwide. The incidence of chemical-related disorders of nervous system development has doubled over the past seven years.

And Rest-of-the-Body Decay

In addition to acting as a nervous-system poison, fluoride, ironically, causes problems with teeth and bones, and also heart, liver, kidneys, gastrointestinal tract, lungs, blood, and hormones.

Perumal E, Paul V, Govindarajan V, Panneerselvam L, "A brief review on experimental fluorosis," Toxicology Letters 2013 Nov 25;223(2):236-51. doi: 10.1016/j.toxlet.2013.09.005. Epub 2013 Sep 17.

Fluoride and the Thyroid

Fluorine, chlorine bromine, and iodine belong to a family of chemical elements called the halogens. The element iodine is a critical factor in metabolism, especially thyroid function, but many tissues are rich in iodine including the eyes and the breasts. Among the halogens, the most chemically active is fluorine and this may be responsible for its effect on suppressing thyroid function. Fluoride was once prescribed for hyperthyroidism in Europe and South America. Doctors used fluoride as a thyroid suppressant through the 1950s based on findings linking fluoride to the occurrence of goiter. Fluoride treatment did reduce thyroid activity in the treated patients.

The Merck Index, An Encyclopedia of Chemicals and Drugs, Eighth Edition, *Paul G. Stecher, Editor, Merck & Co., Inc. Rahway, N.J., U.S.A. (1968); McLaren J, "Possible effects of fluorides on the thyroid," Fluoride 9:105-116 (1976).*

According to clinical research, the fluoride dose capable of reducing thyroid function was notably low – just 2 to 5 mg per day over several months. This dose is well within the range (1.6 to 6.6 mg/day) of what individuals living in fluoridated communities are now estimated to receive on a regular basis. And this level of exposure does not take into account all of the fluoridated dental products, especially toothpastes. Could universal fluoride exposure create an epidemic of hypothyroidism, and consequent obesity? Or worse?

Galletti P, Joyet G, "Effect of fluorine on thyroidal iodine metabolism in hyperthyroidism," Journal of Clinical Endocrinology & Metabolism 18:1102-1110 (1958); Department of Health and Human Services, 1991, Review of Fluoride: Benefits and Risks, pp. 45-47.