

NEWS UPDATES



2012

Iodine and Thyrotoxicosis

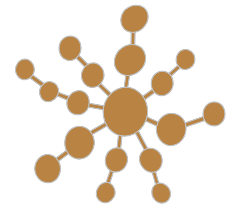
A case study was reported in the New England Journal of Medicine of a fifty-one year old female who presented with periodic palpitations, increased pulse rate, heat intolerance, weight loss and fatigue. Medications, drug use and metabolic disturbance were ruled out as contributing factors. All the symptoms were suggestive of thyrotoxicosis and occurred over a previous six month period. Her blood count, urine tests and metabolic screen were normal. Serum thyroxine (T4) was found to be 14.2 ug per deciliter (reference range 4.5 - 10.9). T3 was 197 ng per deciliter (range 60 -181) and the free T4 index was 4.9 (range 1.0 – 4.0). Thyroid peroxidase antibodies, thyroglobulin antibodies and TSH immunoglobulin were negative. The patient was not taking any type of thyroid support or taking any iodine supplements. Careful questioning of the patient revealed that she was using urinary catheterization several times per day followed by the use of povidone-iodine swabs. When the iodine swabs were discontinued, T4, free T4 index and total T3 concentration were normal along with the disappearance of thyrotoxicosis symptoms.

Comment: This is an interesting case study. Recently I have found patients who have developed hyperthyroid symptoms following the intake of high dosages of iodine. Doctors who have patients with the above presenting symptoms should take a thorough history of their patient to rule out the possibility of symptoms being contributed to by the self intake of an iodine supplement, or exposure to other sources of iodine. **Pramyothin, P, et. al. A Hidden Solution. N.Engl.J.Med. 356,22, 2011.**

Questionable Tests Lead To Questionable Treatment

The National Physicians Alliance (NPA) has listed the top five tests that are considered questionable as well as the treatments based upon these tests. They include routine antibiotic treatment for sinus infection, imaging for low back pain, electrocardiograms and other cardiac screening tests in low-risk patients. They state that results of these tests provide little benefit and may be contributing to increased harm and should be used more judiciously in order to help reduce healthcare costs and improve the quality of health care. **Questionable Tests, Treatments. News@JAMA. Jun. 2011.**

Comment: Many of today's modern marvels of technology have resulted in soaring healthcare costs without much benefit. It is estimated that healthcare costs will rise from 2.7 trillion dollars in 2011 to 4.6 trillion dollars by 2019. Even though more is spent on healthcare per capita in the United States than any other nation, life expectancy is lower than in other countries spending significantly less. There can be many causes for this but one groups' opinion is that our system is so fragmented that many efforts and tests are duplicated time and time again. They cite a study in 2007 that found older patients see an average of seven different doctors in any given year, many which were specialists from four different offices. Newer and more expensive drugs and procedures are adopted by hospitals even though cheaper alternatives would work just as well. Economic incentives have lead to the overuse of drugs and technology. Concerning the industry of early cancer detection, Welch shows that evidence from the United States Surveillance Epidemiology and End results program found that mortality from prostate, thyroid, breast cancer and others has changed very little. Although the numbers of newly diagnosed cancers have skyrocketed, most early cancers have no clinical importance, but serve as targets for harmful surgeries and pointless chemotherapy. **Physician, Heal the System. Health Care That Is Fairer and More Rational Is Also More Affordable. Sci.Amer. Jul. 2011. Welch, H.G, et al. Eds. Over Diagnosed. Making People Sick in the Pursuit of Health. Beacon Press. 2011.**



Cholesterol And Female Fertility

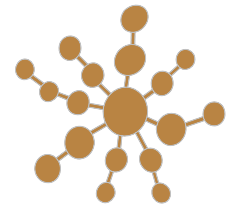
Dr. Annabelle Rodriguez, an endocrinologist at Johns Hopkins University became interested in earlier research by Monty Krieger a geneticist at M.I.T. who discovered a cell membrane protein scavenger receptor named type I (SR-B1). This receptor binds HDL and clears it from the circulation. Krieger found that mice not having the SR-B1 receptor had higher HDL levels compared to those with the receptor. Krieger found that even though the affected mice had high levels of HDL, they also had severe heart disease and the female mice were also found to be infertile. Rodriguez decided to study this in humans and found similar findings. She also found that women who had the SR-B1 receptor deficiency and elevated HDL levels also had low progesterone levels. Further research is needed to determine the full meaning of her studies and to determine the relationship between HDL cholesterol and fertility. Couzin-Frankel, J. *Mice Prompt Look At Cholesterol's Role In Female Fertility. Sci. 332, 2011.*

Comment: This study illustrates the importance of cholesterol for the synthesis of hormones including estrogen and progesterone. However, the balance of cholesterol is also important since high HDL levels may actually lower progesterone and impact fertility in women. Balance of hormones is also important for a normal pregnancy and can be influenced by mineral levels. Estrogen is known to enhance HDL production, therefore it should not be a surprise that high HDL goes along with low progesterone. From HTMA studies we see a relationship between progesterone and the mineral zinc. Zinc is necessary for the production of progesterone and the mineral copper is greatly influenced by the hormone estrogen. When viewing the zinc-to-copper relationship or ratio we can see an approximation of the progesterone/estrogen levels in HTMA results. An elevated zinc/copper ratio would indicate a dominance of progesterone, while a low zinc/copper ratio would indicate estrogen dominance. It is well known that an abnormality in the tissue zinc/copper ratio is related to abnormalities in HDL/LDL ratios as well. From a cholesterol standpoint, very low levels of total cholesterol can contribute to infertility in women. From a hormonal standpoint a major disturbance in the estrogen/progesterone relationship can lead to infertility, and from a mineral perspective a major imbalance in the tissue zinc/copper relationships can reflect and even contribute to infertility. HTMA can be an effective screening tool for evaluating the nutritional status of women with infertility.

Orthostatic Hypotension In The Elderly

Orthostatic hypotension is characterized by a significant drop in systolic blood pressure when rising from a supine position to a standing position. A study in Ireland found that the prevalence of orthostatic hypotension (OH) in an elderly population was surprisingly high. The study included over four-hundred adults with a mean age of 72 years. Eighty-five percent of the group met the definition of OH, a systolic blood pressure drop of 40 mm Hg or greater within fifteen seconds. In fact, twenty-five percent were more likely to have fallen recently due to the condition. Approximately fifty-four percent of the group affected was taking more than four medications. OH is common in individuals taking hypotensive medications as well as those with illness. Romero-Ortuno, R. et al. *Continuous Noninvasive Orthostatic Blood Pressure Measurements and Their Relationship With Orthostatic Intolerance, Falls and Frailty in Older People. J. Am. Geriatr. Soc. 59, 2011.*

Comment: An orthostatic drop in blood pressure leading to dizziness is common in any age group, but goes unrecognized since conventional blood pressure monitoring does not usually check postural changes in blood pressure. At the very least one should ask about dizziness upon standing especially in the elderly as falls associated with the condition can lead to fractures. OH is associated with adrenal insufficiency and a drop in systolic blood pressure upon standing of 8 to 10 mm Hg. This test is called Ragland's sign. Another easily administered test is the pupillary light reflex. A light shined in the eyes should cause a constriction of the pupil immediately. If the pupil dilates after about thirty seconds it would be considered positive. Rogoff's sign is another indicator of adrenal insufficiency and is associated with pain when pressing the lower thoracic region at the costal-vertebral junction. Adrenal insufficiency is commonly seen in individuals with not only major illnesses, but in patients with viruses, chronic fatigue syndrome, fibromyalgia, immune disorders, etc. Since many are over-medicated, drugs can be a major contributor as well and should be evaluated in patients experiencing OH. Adrenal insufficiency leads to an inability to retain sodium and secondarily potassium. HTMA can serve as a screening test for the evaluation of tissue sodium and potassium concentrations, and can reflect the strength of the adrenal glands.



Selenium and Hyperthyroidism - Graves' Disease Ophthalmopathy

Hyperthyroidism can lead to orbital pathology or exophthalmos, a protruding of the eyes. It is estimated that about half of all patients with Graves' disease develop ocular problems. Studies have suggested that increased free radical production plays a role in the development of ocular disorder associated with Grave's disease. Selenium acts as an anti-oxidant as well as supporting the immune system. Marocci, et al, reported a double-blind, placebo-controlled trial of patients with ocular involvement having a mild form of Grave's disease. Patients who were given 100 micrograms of selenium twice a day were evaluated after six months of therapy. Selenium supplementation significantly reduced ocular involvement and slowed the progression of the condition as well as improved quality of life in those treated. **Marocci, C. et.al. Selenium and The Course of Mild Graves's Orbitopathy. N.E.J.M. 364,20, 1011.**

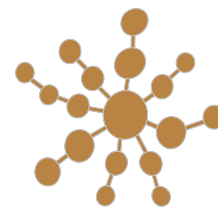
Clogged Arteries Differ in Men and Women

Coronary CT studies to determine coronary blockage was performed on four-hundred and eighty patients experiencing acute chest pain or angina. Researchers at the Medical University of South Carolina noted that the risk of major cardiac events was higher in women who had arterial plaque buildup and hardening of the arteries, whereas men who were at greater risk for heart attack had fatty arterial deposits, instead of calcified arterial plaque found in women. Noting the gender difference in the type of blockages and risks, researchers stated "We're not sure why the risk differences exist." Further, they stated "We also believe that atherosclerosis differs in how it is deposited in men and women." Health experts feel that this information will help in tailoring treatments and customizing care for heart disease based upon gender. **Clogged arteries pose different dangers for men, women. Salamon, M. HealthDay. <http://yourlife.usatoday.com/health/story/2011-21-01>.**

Comment: From an HTMA perspective we can readily see the reason for gender difference in coronary artery disease. First, coronary artery disease should be defined. Typically the term athero-sclerosis and arterio-sclerosis are often used interchangeably. However, technically there is a major difference. Atherosclerosis is a specific term that refers to fatty deposits in artery walls. Arteriosclerosis is a term used to describe stiffening or hardening of the arteries. Both can be present simultaneously, but the mechanisms are different. From HTMA studies we find that females have a preponderance of being categorized as parasympathetic dominant while men are found to be less parasympathetic dominant, or lean more toward sympathetic dominance. Parasympathetic dominance is related to increased tissue calcium accumulation. Therefore, women having elevated soft tissue calcium would have more of a tendency to developing arterio-sclerosis or hardening of the arteries due to increased calcium accumulation within the arteries. This can be influenced by several factors such as relative magnesium deficiency, low tissue phosphorus or elevated calcium-to-phosphorus ratio, elevated tissue copper levels, or low zinc-to-copper disturbances. These changes can be related to various vitamin deficiencies such as vitamins A, C, B6, B1, niacin, etc. The parasympathetic pattern and increased soft tissue calcium accumulation is also influenced by hormones such as excess estrogen or low progesterone to estrogen relationships, high insulin, low thyroid activity and elevated parathyroid activity. Autoimmune conditions can also contribute to soft tissue calcification, which can be brought about by chronic underlying viral conditions, environmental factors, xenobiotics, etc. Even with these and other influences not discussed here, another significant factor is also a potential contributor to arteriosclerosis in women and that is the widespread and indiscriminate recommendation of calcium and vitamin D supplementation. Calcium and vitamin D are parasympatheticomimetic nutrients that can promote an imbalance in the calcium-to-phosphorus and calcium-to-magnesium relationships further contributing to soft tissue calcium deposition.

Males on the other hand, with a greater tendency toward being sympathetic dominant, typically have less tissue calcium accumulation, but have a tendency toward fatty deposition into tissues or atherosclerosis. This tendency is also influenced by nutritional imbalances, hormonal, and environmental factors affecting fat metabolism, but will not be discussed here. Males can also develop arteriosclerosis, but for completely different underlying causes compared to females.

Understanding and being aware of the differing mechanisms contributing to arterio and atherosclerosis in men and women provides the practitioner with an individual and gender-specific approach to therapy for individuals with coronary heart disease.



Stroke and Infection

Infection is a major cause of death in individuals who have strokes, pneumonia being the most common. Researchers feel that stroke triggers a major change in the immune response that decreases the antimicrobial drive of the immune system. Severe lymphopenia is found in the blood, thymus and spleen following stroke. Wong, et.al state “Systemic immunosuppression has been associated with stroke for many years, but the underlying mechanisms are poorly understood.” Wong, C.H.Y., et al. *Functional Innervation of Hepatic iNKT Cells Is Immunosuppressive Following Stroke. Sci. Vol. 334, Oct. 2011.*

Comment: This excellent paper cited above by Wong and colleagues, largely discuss how invariant natural killer T cells (iNKT) activated by stroke contribute to immunosuppression. They found that mice deficient in iNKT cells developed a higher rate of infection and death. This interesting and elegant paper reminded me of HTMA studies that TEI has performed on patients who have had a stroke. At TEI we correlate mineral patterns with various diseases and health conditions. Several years ago we studied mineral patterns of stroke victims and found that the incidence affects males and females equally. However, a significant mineral pattern was noted. Over seventy-five percent of those patients revealed zinc-to-copper ratios of over 8:1. Ideally, the tissue Zn/Cu ratio should be 8:1. An elevation of this ratio would indicate a relative copper deficiency. It should be noted that the type of stroke, hemorrhagic or thrombus was not determined. We however, can surmise that copper deficiency is associated with hemorrhagic stroke due to a loss of connective tissue integrity in blood vessels. Also, we typically find that individuals with copper deficiency are sympathetic dominant having an increased adrenal expression and humoral immune dominance. This would contribute to a reduction in the thymus response and suppression of cellular immunity. Copper plays an important role in immune modulation and when deficient is found to be related to reduced neutrophils, T cell proliferation and interleukin 2 concentrations. Copper is well known to have antibacterial properties; so much so that hospitals are beginning to use copper surfaces in intensive care units and in other hospital settings, reducing hospital bacteria on surfaces by up to ninety-seven percent and bacterial infections in patients by over forty percent. Copper deficiency in stroke patients could cause susceptibility to bacterial infections which can easily be evaluated through HTMA testing. Hospital acquired infection is the fourth leading cause of death in the U.S..

Dietary Supplements and Increased Mortality?

Recently, articles have appeared in journals and the popular press concerning the possibility that the use of multi-vitamins can cause an increase in mortality rates in older women. The latest reports are from an Iowa Women’s Health Study that included over 38,000 women averaging about 62 years of age at the beginning of the study. The study began in 1986 with self reports of vitamin intake from the participants in 1986, 1997 and 2004. The study concluded that “several commonly used dietary vitamin and mineral supplements may be associated with increased total mortality risk.” Mursu, J., et al. *Arch. Intern. Med. 171, 2011.*

Comment: There is certainly a great deal lacking in such a study for it to in any way properly conclude their findings and for this information to be used conclusively to indicate the pros and cons of multi-vitamin and mineral use. First, since the average age at the beginning of the study group was about 62, there were many included that were much younger and older. The follow-up self reports continued over a 28 year period. This would mean the average age at the end of the study was about 90 years. Since the deaths were determined through the State Health Registry of Iowa and the National Death Index, no cause of death were determined. The state of health of the individuals was not reported in the beginning of the study. The use of medications were not reported either. A recent study in the New England Journal of Medicine stated that forty percent of US individuals over the age of 65 years take an average of five to nine medications and eighteen percent take ten or more drugs. Adverse drug events accounted for almost 100,000 emergency hospitalizations each year. It is estimated that adverse drug reactions are the fourth leading cause of death in the U.S. each year. At TEI we recognize that adverse events can occur in individuals who take nutritional supplements and stress the need for individualization of a person’s nutritional needs. However, the above cited study is unreliable in being able to determine the effects of multivitamin and mineral supplements, whether beneficial or detrimental to the population at large. There are just far too many variables that could account for these findings.