Estrogen Toxicity — The Diet-Lifestyle Connection: Obesity, Osteoporosis, Heart Disease and Cancer
Part 2

By David J Zeiger, D.O.

Since my family practice residency the clinical management of women's heath issues has undergone marked changes. Hormone replacement therapy began 20 years ago with estradiol from pregnant mare's urine. Later medical research discovered the benefits of balancing estradiol with synthetic progestin and estriol. Within the past 5 years, soy isoflavones, herbal extracts of chaste berry and or black cohosh has become part of the current medical armentarum.

Medical studies have further revealed that estrogen metabolites and xenoestrogens directly both effect women's health. Specifically, they can increase the risks associated with breast, ovarian, and uterine cancer. The emerging science of functional medicine has demonstrated the beneficial effect of nutrients such as indole 3 carbinol (from Cruciferae vegetables), folic acid, omega 3 fatty acids and lignins from flax seed directly impact estrogen metabolism and may decrease the incidence if not morbidity of such diseases.

Medical developments have reevaluated the prior belief that menopause is a pure estrogen deficient condition. In fact, the following findings are well documented in the medical literature. Salivary estradiol levels can be normal, while progesterone levels fall to below normal levels. American postmenopausal estrogen levels are higher than perimenopausal (a process that begins 10-15 years prior to the end of menses) levels in women from other countries, estrone is made in fat cells, hot flashes and mood swings normally will diminish in 2-5 years after onset, and treatment with 'natural' progesterone is effective in 83% of menopausal women.

The above findings have contributed toward a more sophisticated and accurate understanding of the hormonal changes that often account for the mood swings anxiety and or weight gain which can be experienced by women in both the premenopausal and postmenopausal years. The perimenopausal period, prior to the final cessation of menses, is marked by the erratic production of estrogen and progesterone, along with a decline in ovulatory cycles. During perimenopause, a women's estrogen level is actually increasing rather than declining. The increased estrogen levels will cause more thyroid hormone to be "bound" up (re: Estrogen Toxicity Part 1). Simply put, the reduction in the amount of "free" thyroid hormone causes a slowing of the rate of metabolism because there is less "free thyroid" hormone to use the body's available cellular fuels; ie: carbohydrates, protein, and fats. This in turn causes the "sugar cravings" similar to those experienced during regular premenopausal menstrual cycles. Fluctuating blood glucose levels with sharp drops in glucose, puts additional stress on the adrenal glands. Specifically, the adrenal gland must produce and mobilize more of the adrenal hormone called "cortisol" in an attempt to compensate for the sharp drops in glucose and quickly raise body metabolism. In addition, along with cortisol, the adrenal releases catecholamines, which often cause heart palpitations and generalized feelings of anxiety.

As illustrated above, in order for women to make conscious choices with respect to their health and well being, it is important to stay appraised of significant medical findings concerning the connection between estrogen and woman's health issues. As will be hereafter discussed, this connection is not only important when considering treatments for menopausal related symptoms, but also essential to a complete medical assessment of diseases such as osteoporosis, breast cancer, heart disease and obesity.

Osteoporosis

The facts are that if estrogen was the primary hormone in bone metabolism, no men would have bones and all premenstrual girls would be "jellyfish." Bone physiology is complex system that is dependent on special cells called osteoblasts (bone builders) to build bone and osteoclasts (bone destroyer) to get rid of old bone. In women, particularly, osteoblasts are stimulated by progesterone, testosterone and DHEA. Estrogen is also important because it: 1.) assists in building good bone and; 2.) slows done the bone destroying action of the osteoclasts. Hence contrary to popular belief, osteoporosis is not simply a product of calcium or estrogen deficiency, but is rather best understood as a hormone imbalance.

Recently it has been discovered that a metabolic breakdown product of bone, called deoxy pyridinium (Deoxy-P) can be detected in the urine. In such instance, a urine analysis that is tailored to detect this product will be helpful in the assessment of an in individual's risks associated with osteoporosis. This coupled with a bone scan and salivary hormones levels should provide your physician with sufficient data from which to analyze individual risk factors and enable him/her to make specific recommendations in your treatment.

Breast Cancer

A study done in Holland with 3359 patients looked at the presence of estrogen receptor positive, estrogen receptor negative, progesterone receptor positive and progesterone receptor negative in categorizing breast cancer patient types. This study demonstrated that the greatest incidence in breast cancer is in the first 44 years of life, not during the menopausal years. The National Institute of Health reported in *JAMA*, January 26, 2000, after a 15 year follow up on more than 46,000 postmenopausal women, there was a 20% increase in breast cancer with the use of estrogen alone and a 40% increase when combination of estrogen and progestin (PROVERA™).

Estrogen is oxidized by liver enzymes into to major forms: 2–hydroxyestrone (2-OHE1) and 16-hydoxyestrone (16-OHE1). 2-OHE1 is a weak estrogen and inhibits carcinogenesis. On the other hand 16-OHE1 promotes tumorigenesis. The ratio of preferentially forming one or the other has genetic origins. The good news is that these enzymes are strongly modifiable by dietary and lifestyle influences.

The higher ratio of 2-OHE1 is found preferentially in woman who smoke cigarettes, and eat Cruciferae vegetables; ie broccoli, cabbage, turnips, kale, brussel sprouts, cauliflower and kohlrabi.16-OHE1 formation is stimulated by xenoestrogens; ie: DDT, bisphenol (from polycarbonate plastic decomposition) and nonylphenol (a chemical antioxidant used in manufacture of detergents, spermicides, and toiletries). While I prudently don't advocate smoking to my patients I do recommend that they modify if not eliminate their tobacco use and increase their daily dietary intake of the above mentioned vegetables.

Checking your baseline salivary estrogen, progesterone levels and the 2/16-OHE1 urine levels for estrogen metabolites will aide in the determination of individual risk factors associated with not only breast but uterine and ovarian cancer as well. Moreover, specific blood tests to check for your genetic potential for these cancers will be readily available in the near future.

Cardiovascular Disease

In the May 1, 2000, issue of the *Journal of Family Practice,* an initial report published by the Women's Health Initiative, revealed early data linking estrogen replacement therapy with a slight increase in heart attacks, strokes, and thrombolysis (blood clots). Dr Jacques E. Rosscow, lead project director of the Women's Health Initiative stated:

"Long term estrogen replacement therapy is being ardently prescribed to prevent heart disease with no evidence for these presumed benefits. 66% of physicians who prescribe HRT do so at least in part to prevent coronary heart disease — an indication that is unproved and unacceptable."

The argument that HRT lowers women's risk of heart disease is additionally flawed that it necessarily presumes that women are estrogen deficient. As earlier discussed, most postmenopausal and perimenopausal women, in fact have an increased amount of estrogen relative to progesterone. Furthermore, women on birth control pills have a marked decrease in blood levels of Vitamin B12, pyridoxal 5-phosphate, and folic acid. These nutrients are essential to lowering homocysteine blood levels. Notably, high homocysteine promotes atherosclerosis.

Acquired Obesity

Estrogen promotes an increase in the size and number of fat cells. In addition, stress, high carbohydrate meals, lack of exercise and in some women added estrogen from the use of birth control pills, even Premarin™, will often contribute to a marked increase in body fat.

Stress releases cortisol from the adrenal gland. This hormone single-handedly impacts on thyroid, estrogen and carbohydrate metabolism. High cortisol levels will produce more estrogen and decrease triiodothyronine (T3) the powerhouse thyroid hormone that drives cell metabolism. High carbohydrate diets also release insulin. Even though these may be transient, such higher than normal insulin levels stimulate the production of fat stores in your body.

Fat (adipose tissue) is a major source of estrogen metabolism in postmenopausal women through an enzymatic conversion of testosterone into estrogen. This is usually exhibited in men as gynecomastia and symptoms of hyperestrogenism in women discussed in last month's article.

Nutriceuticals the Next Generation

As previously stated, women may benefit from exploring the herbal and nutritional options available with respect to balancing hormone levels. In that regard Estrobalance™ (EB) from Metagenics. EB is a low-allergy potential, powdered medical food specifically designed to nutritionally support women's symptoms associated with their hormone cycles. EB provides a combination of macro- and micronutrients featuring rice protein, natural plant sterols, antioxidants and fiber, along with all essential vitamins and minerals and a specialized vitamin B-complex to support healthy hormone cycles.

EB also contains kudzu and flax, which modify the effects of circulating estrogens. Kudzu root is high in isoflavones such as daidzein, genistein and puerarin. These isoflavones and/or their metabolites bind to the estrogen receptor and act as 'weaker estrogens,' resulting in an inhibition of the estrogenic effect. Flaxseed meal contains lignin, the fiber that specifically binds hormones such as estrogen, thereby facilitating estrogen excretion. Adding 10 grams (1 Tbsp.) of ground flaxseed to your daily diet over 7 weeks has shown help remove excess estrogen from the gut, inhibit growth of human breast tumor cells, inhibit aromatase activity (the enzymatic conversion of testosterone to estrogen) and increase the production of 2-OHE1.

Before embarking on a course of hormone replacement therapy, I would recommend that a women's hormone status, osteoporosis risk, metabolic detoxification capability, family history (re: genetic predisposition), dietary and lifestyle parameters be thoroughly evaluated by an experienced integrative physician. This information will empower women to optimize their potential for health.

To life and good health,

David J. Zeiger, D.O.

Dr. David Zeiger is a board certified family physician in private practice. He specializes in Integrative Medicine treating chronic/acute illness like IBS, Allergies, Women's/Men's health issues, Thyroid-Adrenal Syndrome, Hypertension, CFIDS/Fibromyalgia, Asthma, Diabetes and Neuromuscular pain management.

He uses acupuncture, functional nutritional medicine, homeopathy, Chinese herbal medicine, neural therapy and ligament regeneration injection technique.

Contact: David J. Zeiger, D.O., healthWorks-Integrative Medical Clinic, 1030 North Clark Street, Suite 301, Chicago, IL 60610; Phone: 312-255-9444/9446; E-mail: zeigerd@healthworksimc.com.

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