Vitamin D May Help Uterine Health

By Greg Arnold, DC, CSCS, September 28, 2010, abstracted from “Dietary Vitamin D Exposure Prevents Obesity-Induced Increase in Endometrial Cancer in Pten +/- Mice” published online September 21, 2010 in the Cancer Prevention Research

Link - http://www.nowfoods.com/BasicArticles/080672.htm

According to the National Cancer Institute (NCI), endometrial cancer is a cancer that forms in the tissue lining the uterus. It most commonly occurs as an “adenocarcinoma”, beginning in cells that make and release mucus and other fluids. The NCI estimates that there will be 43,470 new cases of endometrial cancer and 7,950 deaths in 2010 (1).

While the number one risk for endometrial cancer is having high levels of estrogen (2), a significant risk factor is obesity, known to increase endometrial cancer risk by 300-500% (3, 4), contributing to endometrial cancer’s $790 million in overall costs each year (5).

Now a new study (6) in mice suggests vitamin D may help with uterine health. In the study, four week-old mice genetically engineered to develop endometrial cancer at 28 weeks of age were divided into four groups and fed a standard mouse diet (called AIN-93G Diet (7)) with either:

- 18% energy from fat and 1,000 IU of vitamin D per kilogram of food (control group)
- 18% fat and 25,000 IU of vitamin D per kilogram of diet
- 58% fat to induce obesity and 1,800 IU of vitamin D per kilogram of diet
- 58% fat and 25,000 IU of vitamin D per kilogram of diet.

The authors do admit that 25,000 IU per day for the mice “is 2.5 times the highest recommended dose in humans (8)...but due to metabolic differences between the two species (9), higher vitamin D exposure levels are required to achieve the same biological effect in humans.”

At 28 weeks, the researcher obtained uterine samples from the four groups and found that while vitamin D did not affect endometrial cancer risk, it did have a significant effect on potentially cancerous growths called “hyperplasias” in the uterus. Specifically, 58% of the cells in the uterus of the control group mice were classified as hyperplasias, while those in the obesity-induced group 3 (58% of fat with 1,800 IU vitamin D) had a 78% presence. For group 4, however (58% with 25,000 IU vitamin D), it was only 25%.

As a possible mechanism, the researchers suggested that vitamin D’s benefits for uterine health may lie in its ability to increase activity of a tumor suppressor gene called PTEN which is commonly decreased in endometrial cancer patients (10). They went on to conclude, “Our data confirm the known association between obesity and endometrial cancer risk” and that “dietary exposure to VD inhibited the carcinogenic effect of obesity on the endometrium.”

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Reference: