

Endometriosis

PHYSICIANS COMMITTEE FOR RESPONSIBLE MEDICINE

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Endometriosis is one of the major causes of pelvic pain in women. In this condition, tissue that typically lines the wall of the uterus grows outside of the uterus. Diet can be a useful tool in decreasing the risk of this condition and in treating it.

Endometriosis Basics

Endometriosis is an estrogen-based condition. Normally, the uterine lining cells pass downward and out of the body during menstruation. Sometimes, these cells slip through the fallopian tubes that lead to the abdominal cavity and from there, they can end up virtually anywhere.

These cells will attach to the ovaries, the intestinal tract, the bladder, or elsewhere. They swell and bleed each menstrual cycle, acting in the same manner as the cells inside the uterus. However, unlike the cells inside the uterus, the misplaced cells have nowhere to go and instead become trapped, causing intense pelvic pain associated with the menstrual period. Endometriosis can also lead to infertility in women.

An estimated 5 to 10 percent of women who are of reproductive age have been diagnosed with endometriosis.¹ Risk factors include a history of pelvic infection, uterine abnormalities, and any other condition which prevents normal menstruation. While it runs in families to a degree, genetics do not appear to be a major risk factor.² A compromised immune system is another potential risk factor for endometriosis. A well-functioning immune system may be able to eliminate the growth of the endometrial tissue that pushes outside of the uterine cavity.³

Symptoms of this condition end temporarily with pregnancy. After menopause, endometriosis is rare, unless women take supplemental estrogens.

Because symptoms of endometriosis can be confused for other conditions, such as pelvic inflammatory disease or irritable bowel syndrome, it is difficult to diagnose. The only way to diagnose endometriosis is by making a small incision below the navel and actually looking into the abdominal cavity with a slim tube called a laparoscope. The Endometriosis Association reports that 70 percent of women diagnosed with the condition were first told by their doctors that there was no physical reason for their pain.

Effects of Diet on Endometriosis Risk

The etiology of endometriosis is not well understood; however, certain foods appear to increase the risk of endometriosis. A recent review of 11 studies evaluating the association between food intake and endometriosis found that women with endometriosis tended to consume fewer vegetables and omega-3 fatty acids and more red meat, coffee, and trans fats, compared with those without the condition.⁴ Frequent red meat consumption is associated with endometriosis risk, while fruit and vegetable intake appears to be protective. In an Italian population, women who ate at least seven servings of red meat per week had twice the risk of endometriosis compared with those who ate fewer than three servings of red meat per week. Women having 14 or more servings per week of green vegetables or fruit had a 70 percent or 20 percent lower risk of endometriosis, respectively, compared with those who ate fewer than six servings per week.⁵

The consumption of trans fats also increases risk of this condition. According to an analysis of the Nurses' Health Study II, those with the highest trans-unsaturated fat intake were 48 percent more likely to be diagnosed with endometriosis. In contrast, polyunsaturated fatty acids seem to have a protective effect. In the same study, those consuming the most long-chain omega-3 fatty acids were 22 percent less likely to be diagnosed with endometriosis, compared with those consuming the least of these fatty acids.⁶

According to researchers at the Harvard School of Public Health, women who have two or more cups of caffeinated coffee (or four cans of cola) per day were found to be twice as likely to develop endometriosis as other women,⁷ though the reason for this effect is unknown.

Alcohol is also cited as a potential risk factor for endometriosis. A recent meta-analysis of studies published through 2012 found a significant association between alcohol consumption and endometriosis risk, with any amount of alcohol consumption increasing risk by as much as 19 percent.⁸ An earlier study found that women who drank alcohol were 50 percent more likely to have endometriosis and consequent infertility.⁹

Chemical Exposures and Endometriosis

Certain chemicals are associated with an increased prevalence of endometriosis. These include polychlorinated biphenyls (PCBs), which were once commonly used in electrical equipment, hydraulic fluid, and carbonless carbon paper; phthalates, used as plasticizers to increase plastic flexibility and durability; and organochlorine pesticides (OCPs), which were widely popular in agriculture practices.

These chemicals can act in a variety of ways. Organochlorines bind to estrogen receptors and mimic hormones that in turn can affect endocrine pathways and alter hormonal function.¹⁰ Moreover, PCBs and OCPs impair the immune defenses against abnormal cells. In fact, the natural killer cells and other white blood cells that maintain a constant lookout for any abnormal cells have been shown to be weakened in women with endometriosis.¹¹

A study conducted in 2005 showed that women exposed to PCBs have a higher prevalence of endometriosis.¹⁰ Researchers did examine urinary phthalate metabolite concentrations in relation to endometriosis, using data from the National Health and Nutrition Examination Survey (NHANES) from 1999-2004, and found that exposure to monobutyl phthalate (MBP) is positively correlated with endometriosis risk.¹² In an analysis conducted using data from the Women's Risk of Endometriosis (WREN) study, increased endometriosis risk was associated with higher serum concentrations of organochlorines, including β -hexachlorocyclohexane (HCH) and mirex.¹³

These toxins tend to accumulate in animal fat, and the major route of human exposure is through food, particularly fish, as well as other meat and dairy products.¹⁴ Chickens, cows, pigs, and other animals fed grains treated with pesticides and sometimes contaminated with other organochlorines tend to concentrate these compounds in their muscle tissues and milk. While there may also be organochlorine pesticide residues on nonorganic fruits or vegetables, they are less concentrated and easier to remove. Organic produce is grown without chemical pesticides and is the safest option for avoidance of these chemicals.

While bans on some of these compounds, such as the organochlorine DDT, have caused exposures to decrease since the 1970s, many of these compounds are still in use, making continued contamination, largely through agricultural practices, a concern. Additionally, even after stopping use, residual chemicals can still be found in many food products. Because these chemicals have a very long half-life and can remain in the body for up to 15 years, the danger persists for those who ingested them at any point in time.¹⁵

Contamination with organochlorines and PCBs is of particular concern to nursing mothers because these chemicals are excreted through their breast milk¹⁶ and are thus received by the baby.¹⁷

Because vegetarians avoid foods that harbor the most organochlorines including fish and other meat and dairy products, they are at an advantage. Evidence suggests that vegetarian women have much lower levels of pollutants in their breast milk compared with other women. Ultimately,

to avoid chemical contamination, which could contribute to endometriosis, the earlier one begins a plant-based diet, the better.

Using Food as a Treatment for Endometriosis

While some women with endometriosis improve spontaneously, most find that, without treatment, their symptoms continue or gradually worsen. Medical approaches rely on anti-inflammatory painkillers and on hormonal therapies designed to shrink endometrial tissues. Surgical treatments include removing cell clumps, severing pain nerves, and even hysterectomy, sometimes with removal of the ovaries. Today, laparoscopy is the preferred method both in the diagnosis and in the treatment of endometriosis.^{18,19}

Dietary treatment is based on the fact that estrogen fosters the continued growth of the misplaced cells in endometriosis. Without estrogen, the clumps of cells will eventually wither away. Thus, reducing estrogens through dietary means may make a significant difference.

While clinical studies have yet to be performed assessing diet as a treatment method for endometriosis, individual success stories demonstrate marked benefits of adopting a low-fat, vegetarian diet for endometriosis. Low-fat, vegetarian foods are the best options for dietary intervention, because they help to reduce estrogen levels in the blood. Ronald Burmeister, M.D., a gynecologist in Rockford, Ill., has treated multiple cases with this hormone-balancing diet. Diet may be an optimal treatment method for endometriosis because it is inexpensive, safe, and, unlike hormone treatments, it does not interfere with efforts to conceive.

In an effort to prevent or treat endometriosis, exercise can be a useful tool as well, as it can reduce hormone activity and strengthen the immune system. Women who engage in frequent strenuous exercise have at least 75 percent lower risk for endometriosis, compared with those who do not engage in high-intensity activity.²⁰ Exercise is also a more effective in treating symptoms of endometriosis than taking painkillers.²¹

Though endometriosis can be a dangerous and painful condition, if chemical contamination is avoided, if red meat isn't consumed, and if hormone levels are controlled, risk can largely be lowered. Symptoms can also be treated using dietary changes along with exercise. Overall, adopting a low-fat, plant-based diet may be an effective method for both preventing and treating endometriosis.

References

1. Luisi S, Galleri L, Marini F, Ambrosini G, Brandi ML, Petraglia F. Estrogen receptor gene polymorphisms are associated with recurrence of endometriosis. *Fertil Steril*. 2006;85:764-766.
2. Simpson J, Bischoff F. Heritability and molecular genetic studies of endometriosis. *Ann N Y Acad Sci*. 2002;955:239-251.
3. Berkkanoglu M, Arici A. Immunology and endometriosis. *Am J Reprod Immunol*. 2003;50:48-59.
4. Parazzini F, Viganò P, Candiani M, Fedele L. Diet and endometriosis risk: a literature review. *Reprod Biomed Online*. 2013; 26:323-36.
5. Parazzini F, Chiaffarino F, Surace M, et al. Selected food intake and risk of endometriosis. *Hum Reprod*. 2004;19:1755-1759.
6. Missmer SA, Chavarro JE, Malspeis S, et al. A prospective study of dietary fat consumption and endometriosis risk. *Hum Reprod*. 2010;25:1528-1535.
7. Grodstein F, Goldman MB, Ryan L, Cramer DW. Relation of female infertility to consumption of caffeinated beverages. *Am J Epidemiol*. 1993;137:1353-1360.
8. Parazzini F, Cipriani S, Bravi F, et al. A metaanalysis on alcohol consumption and risk of endometriosis. *Am J Obstet Gynecol*. 2013;209:106.
9. Grodstein F, Goldman MB, Cramer DW. Infertility in women and moderate alcohol use. *Am J Public Health*. 1994;84:1429-1432.
10. Louis GM, Weiner JM, Whitcomb BW, et al. Environmental PCB exposure and risk of endometriosis. *Hum Reprod*. 2005;20:279-285.
11. Dmowski WP. Immunological aspects of endometriosis. *Int J Gynecol Obstet*. 1995;50:S3-S10.
12. Weuve J, Hauser R, Calafat AM, Missmer SA, Wise LA. Association of exposure to phthalates with endometriosis and uterine leiomyomata: findings from NHANES, 1999-2004. *Environ Health Perspect*. 2010;118:825-832.
13. Upson K, De Roos AJ, Thompson ML, et al. Organochlorine pesticides and risk of endometriosis: findings from a population-based case-control study. *Environ Health Perspect*. 2013;121:1319-1324.
14. Munoz-de-Toro M, Beldomenico HR, Garcia SR, et al. Organochlorine levels in adipose tissue of women from a littoral region of Argentina. *Environ Res*. 2006;102:107-1
15. Patandin S, Dangnelie P, Mulder P, et al. Dietary exposure to polychlorinated biphenyls and dioxins from infancy until adulthood: a comparison between breast-feeding, toddler, and long-term exposure. *Environ Health Perspect*. 1999;107:45-51.
16. Romanic S, Krauthacker B. Organochlorine pesticides and PCB congeners in human milk from two population groups in Croatia. *Bull Environ Contam Toxicol*. 2006;76:705-711.
17. Hedley A, Wong T, Hui L, Malisch R, Neslon E. Breast milk dioxins in Hong Kong and Pearl River Delta. *Environ Health Perspect*. 2006;114:202-208.
18. Langebrekke A, Istre O, Busund B, Johannessen H, Qvisgstad E. Endoscopic treatment of deep infiltrating endometriosis (DIE) involving the bladder and rectosigmoid colon. *Acta Obstet Gynecol Scand*. 2006;85:712-715.
19. Dubenard G, Piketty M, Rouzier R, Houry S, Bazot M, Darai E. Quality of life after laparoscopic colorectal resection for endometriosis. *Hum Reprod*. 2006;21:1243-1247.
20. Dhillon PK, Holt VL. Recreational physical activity and endometrioma risk. *Am J Epidemiol*. 2003;158:156-164.
21. Koppan A, Hamori J, Vranics I, et al. Pelvic pain in endometriosis: painkillers or sport to alleviate symptoms? *Acta Physiol Hung*. 2010; 97:234-239.