Endometriosis

There is a fine delineation between what is considered living and what is considered non-living. All living organisms are grouped together by the fact that they: are complex but ordered; can regulate an internal environment; can grow, develop and pass on DNA; can process energy; can respond to stimuli; reproduce; and evolve. Humans, like all other living organisms exist within these seven parameters of life. The human body is an intricate machine with many fine, inner-workings. As such, humans have evolved eleven different body systems to fulfill the seven principles of life. The excretory system (removes wastes), circulatory system (transports materials), digestive system (obtains energy, removes wastes), respiratory system (gas exchange), and immune system (defense) are all intimately tied to regulating the internal environment and processing energy. The integumentary system (protection), muscular system (movement), skeletal system (support and structure), and nervous system (information processing), are directly involved in responding to stimuli, growth and development. The endocrine system (internal regulation) and reproductive system (produce gametes) are key players in growth, development, and passing on DNA. Together, these eleven systems work together to maintain life. On occasion, one or more of these systems does not function correctly. In the case of the illness endometriosis, the female reproductive system does not function properly. The female reproductive system has two small ovaries which produce thousands of eggs, two long oviducts that connect to the uterus (a pear-shaped organ), and a muscular tube called the vagina that extends from the cervix at the base of the uterus down and out of the body. The inside of the uterus (sometimes called the womb), has a special lining called the
endometrium. The endometrium has many blood vessels inside of it. When a woman is not pregnant, hormones will cause her endometrium to engorge with blood, thicken and then later slough off; this cycle occurs approximately once per month. If a woman is pregnant, other hormones will cause her endometrium to engorge with blood, but not slough off; the endometrium becomes a nutritionally rich place for a developing embryo to implant and develop.

Endometriosis has been documented in human history for more than 4,000 years. From the time of the Ancient Greeks, there are writings describing infertility, pain, uterine ulcers and other symptoms that match the description of endometriosis. In 1860, a man named Karl von Rokitansky identified it microscopically. Endometriosis itself is a disease in which endometrium (uterine tissue) grows in locations outside of the uterus (see Figure 1). Typically, this tissue can grow in the ovaries, oviducts and actual walls of the uterus, but it can happen in many other places, including the intestines, bladder, ureters, and very rarely, the lungs, brain, and skin (see Figure 2). The places where endometriosis occurs will bleed each month; this can lead to inflammation and scaring. There is no correlation between the amount of endometrial tissue in various places and the extent of the symptoms. For example, a woman with very few implants or lesions may have very serious pain, and another woman with many extensive lesions may appear asymptomatic (Wellberry, 1999). The exact cause of endometriosis is unknown, but it is most likely due to many factors. Three important factors are genetics, environment and age. In terms of genetics, a family history of endometriosis makes it more risky; that is, it is more likely that a woman will
have endometriosis if many women in her family tree have it also. Relating to the environment, a few studies have shown that there is a possible link between exposure to dioxin and having the condition [Dioxins are 6-membered carbon rings, in which two of the carbons are replaced by oxygen atoms]. The research regarding dioxins and endometriosis is not complete, and evidence remains insufficient. One theory to describe the development of endometriosis is retrograde menstruation. In retrograde menstruation, some endometrial debris will flow back through the oviducts and out into the woman’s abdomen, where it can attach and cause the disease to start (see Figure 3). Retrograde menstruation does happen in many women, but the immune system typically clears the debris before anything goes wrong. A weak immune system might contribute to retrograde menstruation leading to endometriosis. A second theory is that epithelium in the abdominal cavity is “transformed” into endometrial tissue; this may happen due to irritation from retrograde menstruation (Wellberry, 1999).

Endometriosis can only happen in females, as males do not have the ability to generate endometrial tissue. It occurs in 6-10% of the female population. Within that group 30-50% are infertile. There is a strong association between infertility and endometriosis. Although it can appear at any age, women in their 40s show the highest incidence of this condition (Bulletti, Coccia, Battistoni, & Borini, 2010). Endometriosis can even occur past menopause. This disease can be fatal, and about 200 women die from it each year. Endometriosis seems to appear less often in women that have given birth vaginally, and it appears more often in women who have given birth by Cesarean section only. The reasons for this remain unclear. Endometriosis causes

Figure 2: Possible locations of endometriosis
pain and infertility. About 25% of women with endometriosis show no symptoms. (Bulletti et al., 2010). Some common symptoms are pelvic pain, abdominal pain, lumbo-sacral heaviness, nausea, lethargy, chronic fatigue. With regard to the reproductive system and excretory system, women can experience painful menstrual cramps, painful sexual intercourse, painful urination and a need to urinate often, lower back pain, and irregular periods. Some women are infertile, which means they cannot bear children. Relating to the digestive system, some women have gastrointestinal problems, including nausea, vomiting, diarrhea, and constipation. Interestingly, there can be effects that manifest in the endocrine and immune systems. Women with endometriosis may have low grade fevers (less than 101 degrees Fahrenheit), hypoglycemia (low blood sugar) and headaches.

Endometriosis can be diagnosed through sonography, laparoscopy and biopsy. Sadly, there is no cure for it. Women with endometriosis will have it for life. Each woman needs a personalized management plan; one that takes into account her age, symptoms, and desire to bear children. In the most severe situations, women can have surgery to remove the extraneous endometrial tissue from the various places they may be in her abdomen; this would be to remove any lesions she may have. Another surgical option is to have a hysterectomy, in which the uterus is removed from the woman’s body. After receiving a hysterectomy, the woman can no longer bear children, so the woman must consider this very carefully. This is most likely not
recommended in young girls who have not yet reached child-bearing age. Non-invasive treatments include lifestyle changes and medications. A woman with endometriosis can exercise to reduce pain and limit the amount of alcohol she consumes. Hormonal treatments, birth control pills (which contain sex hormones), intrauterine devices (IUDs), and nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen and aspirin are all medications that can be used to help manage endometriosis. Birth control pills, or oral contraceptives, can stop ovulation, preventing an egg from leaving an ovary each month. By stopping ovulation, the menstrual cycle does not happen normally, and the amount of menstrual fluid is reduced. A reduced amount of menstrual fluid could reduce the amount of retrograde menstruation that occurs (Vercellini, Eskenazi, Consonni, Somigliana, Parazzini, Abbiati, and Fedele, 2011). Women who are infertile can be given in vitro fertilization (IVF) to bear children while having endometriosis.

Endometriosis is more prevalent amongst women than most people may realize. Interestingly, there is quite an extensive list of celebrities who have this condition: Whoopi Goldberg, Dolly Parton, Hilary Clinton, Jillian Michaels, Susan Sarandon, Marilyn Monroe, Tia Mowry, Queen Victoria of England, Chaz Bono (Cher and Sonny Bono), Toni Braxton, and Pamela Anderson, to name a few. Chaz Bono is the transgendered son of Cher and Sonny Bono. Although Chaz lives life as a male, Chaz was born biologically female and thus is able to have endometriosis. There are rumors that many more women have this condition: Sharon Stone, Celine Dion, Nicole Kidman, Khloe Kardashian and more.

While the disease is physical, it does carry psychological, social, and even economic impacts. Historically, women with endometriosis were seen as mentally unstable. Women were given treatments that today would be considered silly: leeches, straight-jackets, bloodletting, chemical douches, genital mutilation, pregnancy, hanging upside down, surgery and being
executed (for being suspected of being a witch). To this day, there remains an unfortunate link between pelvic pain and mental illness such that women today are often delayed in receiving the correct diagnosis. Women can be delayed as much as six to seven years! Relating to economic impact, women with endometriosis may not be able to work full time and therefore cannot earn very much money, and they may incur high medical costs in managing the condition; this can lead to a lower quality of life.

References

