Pathophysiology and Pathogenesis of Endometriosis

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Introduction

"Endometriosis is a chronic inflammatory and hormone-dependent condition characterized by the presence of endometrial tissue outside the uterine cavity. Endometriosis is associated with lesions encompassing glands and stroma that are similar to the local, eutopic, and endometriotic areas. Women suffering from endometriosis experience pain and infertility. The annual cost of endometriosis-related treatments is estimated to be $55 billion. This is an excellent opportunity to explore the pathogenesis, pathophysiology, and potential treatments of endometriosis, which are often affected by the nebulous nature of the disease. The goal of this pathophysiological process is extensively researched, but the agreement regarding future progression and the ability to conceive can lead to increased immune system involvement, which can result in a reduced incidence of endometriosis.

Although endometriosis is commonly associated with infertility, it can also cause severe pain, dyspareunia, and dysmenorrhea. Pain associated with endometriosis is often not always explained by the presence of the menstrual cycle. The pain is often associated with eutopic endometrial tissue, but the symptoms are not consistent with the menstrual cycle. This pain can be both constant and cyclic, and it can be severe enough to interfere with daily activities. Women suffering from endometriosis experience pain and infertility. The annual cost of endometriosis-related treatments is estimated to be $55 billion. Although endometriosis is often not a life-threatening condition, it can significantly affect the quality of life of many women, and there is much research being done to reduce the occurrence of endometriosis.

Signs & Symptoms

Cyclical or non-cyclical chronic pelvic pain

Dysmenorrhea

Menorrhagia

Irregular uterine bleeding

Infertility

Theories of Pathophysiology

Hormones

Endometriosis is an inflammatory condition and is associated with the presence of endometrial tissue outside the uterine cavity. The endometrial tissue is exposed to the effects of hormones, such as estrogen and progesterone, which can cause the tissue to proliferate and invade surrounding tissues. The presence of these hormones can also cause the tissue to become angiogenic, which can lead to the formation of new blood vessels. The proliferation of new blood vessels can lead to the formation of new lesions, which can cause pain and infertility.

Oxidative Stress and Inflammation

Vilain et al. (2018) characterized oxidative stress as an "An imbalance between reactive oxygen species (ROS) and antioxidants" (p. 16). It has been observed that women with endometriosis have higher serum levels of ROS than those without. It is theorized that increased iron levels facilitate the development of ROS, which can cause tissue damage and increase the body's inflammatory response. The presence of macrophages contributes to this imbalance, as observed by Sciacca et al. (2016). Endometriotic lesions are increased by angiogenesis due to increased vascular endothelial growth factors (Sourial et al., 2014).

Bacterial Contamination

Hypothesis

The bacterial contamination hypothesis is relatively new, and it proposes that the naturally occurring bacteria in the vagina can contribute to the development of endometriosis. Although it is not a life-threatening condition, it can significantly affect the quality of life of many women, and there is much research being done to reduce the occurrence of endometriosis.