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Review Article

Epidemiology, diagnosis, and clinical management of endometriosis

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ABSTRACT

When it comes to talk about endometriosis, this affects around the world, and the occurrence of this has done to around 176 million women worldwide. This misplaced endometrial tissue responds to changes and undergoes cyclic bleeding and inflammation. As a result, it may produce complications, which includes pain, adhesions, fibrosis, and dysfunction in affected organs. Furthermore, there are currently no biomarkers for diagnosis without procedures. For diagnosing endometriosis, there is a gold standard laparoscopy combined with confirmation. The primary goals in treating endometriosis are to alleviate pain symptoms, improve fertility if desired by the individual affected, and prevent disease progression. The selection of treatment options is influenced by factors, including the extent and position of the illness, the patient's age, and future family plans. Nevertheless, it is essential to acknowledge that there are limitations and risks involved, such as symptoms potentially returning after stopping treatment or complications that may arise from procedures.

Keyword: Endometriosis, Pelvic pain, Infertility, Diagnosis, Treatment

INTRODUCTION

Across the globe, there exist conditions that predominantly affect women. Among these conditions, a handful are particularly widespread. Among all the conditions, endometriosis caused suffering to 176 million women worldwide.[1,2] When the lining tissue remains similar to the lining grows in areas outside of its location, then endometriosis occurs. These growths can potentially develop in areas of the body including the lining of the abdomen, ovaries, fallopian tubes, intestines, bladder and tubes connecting the kidneys to the bladder.[3] The identification of lesions consisting of glands and stroma located outside the uterus serves as a defining feature of endometriosis. These lesions can take forms such as lesions, superficial implants or cysts on the ovaries, or deep infiltrating disease. There are several hypotheses that remain which haven't yet solved completely regarding endometriosis. One main hypothesis is regarding the development of endometriosis since it is still unknown to scientists. One possibility is retrograde menstruation, which happens when some of the lining

flows backward through fallopian tubes into the pelvic area during a menstrual cycle. This flow and circulation through blood or lymph vessels may result in endometrial tissue implanting and growing in locations. Hence other factors like inflammation or immune responses could play a role in determining whether these deposited lesions take hold and persist in the cavity. Another theory suggests that remnants from development called Müllerian remnants could contribute to endometriosis formation if they didn't properly differentiate or migrate during that stage.[4,5] Furthermore, it is possible for blood cells in circulation to transform into endometriosis lesions. It needs to be noted that the surrounding environment also can influence the development of these lesions. It is important to consider that while endometriotic lesions share some similarities with tissue, they do not fully resemble the endometrium in all aspects. Unfortunately, many women endure a period of time before receiving a diagnosis of endometriosis. Regrettably, numerous women go through a period before receiving a diagnosis of endometriosis.[6] This delay causes them unnecessary suffering and significantly impacts their quality of life. Since most women start experiencing symptoms during their adolescence, it is crucial to refer them for diagnosis and appropriate treatment to alleviate pain, prevent the progression of the disease, and preserve fertility. However, there are barriers that hinder diagnosis. These include the cost associated with diagnosing and treating patients as well as the presence of confusing symptoms like cyclic and acyclic pain.[7,8] Therefore, a non-invasive diagnostic tool for endometriosis would greatly aid detection and intervention, ultimately leading to a quality of life and preserving fertility. Until now, researchers have put forward genetic and serum markers as potential diagnostic tools for identifying endometriosis.[9,10] However, none of these markers have demonstrated sensitivity or specificity to justify their use as screening tests. There are several theories, which include changes in the lining of the cavity caused by retrograde menstruation spreading through blood vessel system dysfunction, genetic predisposition, and environmental factors.[11] Symptoms may recur after treatment discontinuation. There may be complications related to surgery. Therefore, creating treatment plans catering to each patient's needs and expectations is crucial. The aim of this review is to explore the treatment options for managing endometriosis.

LITERATURE SEARCH

On October 1, 2023, we reviewed the existing literature regarding the field of endometriosis, focusing on its epidemiology, diagnosis, and clinical management. To conduct our research, we explored databases, including Medline, PubMed, Scopus, and ClinicalTrials.gov. In each database search, we utilized medical subject headings as various related terms. Our keywords encompassed endometriosis itself, along with epidemiology, diagnosis, management, and treatment, among others. Additionally, to ensure results, we manually searched through Google Scholar. For this, we also checked the reference section of the retrieved papers for additional sources. To ensure the quality of our review, we applied inclusion criteria, such as excluding papers published before 2008 or after 2023 and preferring English language publications. We did not apply any restrictions based on age or publication type.

DISCUSSION

Epidemiology

Through a comprehensive investigation, it becomes evident that on a global scale, an approximate proportion of 10% of the female populace grapples with the enigmatic ailment known as endometriosis. However, it is prudent to consider that this statistical representation may, in actuality, fall short of accurate reflection due to issues concerning awareness and the limited accessibility to diagnostic measures for women affected by this condition. The prevalence of endometriosis exhibits considerable heterogeneity across various demographic cohorts, contingent upon the specific methodologies employed for its ascertainment. Notably, when women subject themselves to the investigative procedure of laparoscopy, involving the introduction of an endoscopic camera into the abdominal cavity for the exploration of pelvic pain etiology, the estimated prevalence of endometriosis spans a wide spectrum, ranging from a modest 25% to a striking 60%. Notably, within the subset of endometriosis cases characterized by the presence of chocolate cysts, a condition inherently intertwined with endometriosis, the observed occurrence rate escalates to a substantial 80%. Deep infiltrating endometriosis (DIE), which represents an advanced and severe manifestation of this malady, characterized by its invasive encroachment upon adjacent organs, exerts its affliction upon approximately 20% of women within the afflicted population. While the precise etiological underpinnings of endometriosis remain shrouded in scientific enigma, there exists a constellation of factors that conceivably elevate the susceptibility to this enigmatic condition.[6] These predisposing factors encompass the commencement of menstruation at an early age, the experience of menstrual cycles characterized by excessive menstrual flow and prolonged duration, familial lineage marked by a history of endometriosis, null parity, a diminutive body mass index (BMI), tobacco consumption, and exposure to environmental agents such as dioxins. Endometriosis profoundly influences the overall well-being and health status of women who grapple with its capricious grasp. Chronic and unremitting pain, emblematic of this ailment, possesses the capacity to disrupt routine activities, compromise occupational or scholastic performance, impede social engagements, and cast a pall over intimate relationships. Furthermore, endometriosis bears the potential to exert deleterious effects upon fertility, owing to its insidious impact on vital reproductive structures, including the ovaries, fallopian tubes, and the uterine milieu. Additionally, it precipitates a milieu of

inflammation and oxidative stress within the afflicted anatomical precincts. Rigorous research illuminates that a substantial cohort, ranging from 30% to 50% of women grappling with endometriosis, encounter formidable obstacles on their quest for conception.[1,4,12] With the physical effects, it is important to recognize the hidden impact that endometriosis can affect individuals emotionally and psychologically and can affect person badly. It leads to the development of difficulties, including increased stress, anxiety, and feelings of sadness. These factors ultimately result in a decline in self-confidence and overall life satisfaction. Moreover, the specter of endometriosis casts a long shadow over the economic landscape of affected individuals. The financial burdens imposed are multifaceted, encompassing elevated healthcare expenditures attributable to the procurement of medications, invasive surgical interventions, and protracted hospitalizations. Concurrently, the condition engenders productivity losses, manifesting as absenteeism from occupational commitments and a notable decrement in job performance standards.

Diagnosis

While there are methods that doctors can use to diagnose endometriosis in settings there might be delays in the process. This is because the symptoms can vary, and both women and healthcare providers may perceive pain as something. Additionally, confirming the diagnosis often involves procedures. Unfortunately these delays can have an effect, on women's well-being and overall quality of life.[13] Hence, it is essential to acknowledge and identify endometriosis, for management. The diagnosis process involves a combination of symptom evaluation through imaging techniques. Confirming it with an examination. Typical indications may include pain experiencing discomfort during periods (dysmenorrhea) pain during intercourse (dyspareunia) difficulties, with fertility and irregular bleeding.[14] Conditions such as pelvic inflammatory disease (PID) ovarian cysts, irritable bowel syndrome or interstitial cystitis can also lead to similar symptoms. That's why it's important to conduct an examination of your history and physical assessment. This will help identify causes of pain while determining the extent and location of endometriosis. Noninvasive imaging techniques like ultrasound and MRI can provide information on the presence and severity of endometriosis which can reduce the need for invasive interventions. Pelvic ultrasound is a cost approach that can reliably detect endometriosis. However, its effectiveness in identifying deep endometriosis is somewhat limited. Conversely, MRI is a sensitive technique that allows for comprehensive visualization of both ovarian and extra ovarian endometriosis.[15,16] However, MRI is pricier, not easily accessible, and demands expertise compared to ultrasound. In order to detect endometriosis, several new techniques including imaging techniques are enrolled which are mostly recommended by the doctors now a day. These include ultrasound, Sono-vaginography, Sono-hysterography, computed tomography, and positron emission tomography. However, these techniques are not commonly employed in practice due to their availability, cost effectiveness concerns or accuracy limitations. Laparoscopy is widely recognized as the preferred method for endometriosis. It involves a procedure where a slender tube with a camera (laparoscope) is inserted through an incision in the abdomen section in order to visualize the pelvic organs.[17] A noninvasive process like laparoscopy helps to observe the lesions and their removal also this may be used for destruction using various energy sources like laser or electrocautery.[18] The presence of varying levels of tissue activity, in these hidden lesions may play a role in the reoccurrence or development of endometriosis as the persistence or return of pain symptoms in women even after successful removal or treatment of visible lesions, through laparoscopy.

Clinical manifestation

Endometriosis can cause discomfort and various issues during menstruation in women. This is because the like tissue responds to changes in the menstrual cycle, similar to normal endometrium. It thickens, breaks down, and bleeds on a daily basis. However, unlike endometrium, it becomes trapped in the pelvis leading to inflammation, irritation, scarring and adhesions that bind organs together. There are several signs of symptoms that arise in each individual woman based on occurring endometriosis since this varies to women. The reported symptom is pelvic pain that can worsen before or during periods of intercourse, bowel movements, or urination. Basically, at any point, in the menstrual cycle. There may be several other symptoms that may occur include changes in bleeding, difficulties conceiving a child, feelings of tiredness or fatigue, irregular bowel movements, like diarrhea or constipation, abdominal bloating, and occasional bouts of nausea.

Treatment

Management of endometriosis requires necessary care for patients. This requires effective measures and follow-up to the patient in order to get well sooner. In terms, there are two approaches to addressing endometriosis; medical interventions and surgical procedures.[19] When it comes to managing endometriosis, strategies primarily involve using agents that can suppress the activity of the disease and reduce associated inflammation. These medical treatments encompass a variety of interventions.[12,20] One prescribed medical approach is contraceptives. Birth control pills help regulate fluctuations throughout the cycle which can result in reducing the size and activity of endometrial lesions while providing relief from pain symptoms. Another medical option is progestin which includes hormone progesterone derivatives. Progestin can be administered through forms such as pills, intrauterine devices (IUDs), or injections. Progestin acts beyond and inside the uterus cavity to alleviate distress. Gonadotropin Releasing Hormone agonists or antagonists are a type of

medication that works by adjusting pathways. They effectively create a condition for menopause, which helps to inhibit the growth of endometriosis lesions.[21] These inhibitors are typically considered when other hormonal treatments have not been effective. Selective progesterone receptor modulators are an option in the range of treatments. Additionally, they may come with side effects like bone density changes, weight fluctuations, mood alterations, acne, or irregular menstrual bleeding. As a result, medical therapies are generally recommended for women with mild to endometriosis who either do not plan on conceiving or have contraindications for interventions. There are procedures available for this surgical purpose. Skilled surgeons perform surgeries to remove or eliminate abnormal tissue caused by endometriosis. This method does not relieve pain. It also has the potential to improve fertility outcomes by restoring the normal structure of the pelvic area. During a procedure, it is crucial to separate adhesions. These bands of scar tissue can form between organs due to endometriosis. This meticulous separation can greatly improve organ function. Provide relief from discomfort. In cases where endometriomas, which are cysts associated with endometriosis, have developed, it may be necessary to remove these cysts. This procedure serves a purpose by preventing the recurrence of cysts and alleviating pain. For situations involving endometriosis or when fertility preservation is not a concern physician may recommend a hysterectomy. A hysterectomy, a surgical procedure entailing the excision of the uterus, serves as a viable recourse to mitigate distress. For those grappling with moderate to severe endometriosis, surgery emerges as a compelling option to ameliorate debilitating symptoms. Laparoscopy, a minimally invasive technique, typically supersedes open surgery (laparotomy) due to its manifold advantages. These advantages encompass diminished invasiveness, expedited postoperative recuperation, reduced incidence of complications, and more favorable cosmetic outcomes. However, it is imperative to acknowledge that surgical interventions are not without their attendant risks Potential perils encompass hemorrhage, infection, inadvertent organ impairment, or the specter of endometriosis recurrence.[22] Consequently, surgical alternatives are customarily recommended for women grappling with moderate to severe endometriosis who aspire to conceive or have hitherto found scant respite in conventional treatments. Paramount in this process is the shared decision-making dynamic between the patient and their healthcare provider, a collaboration of paramount importance in achieving patient-centric outcomes. By augmenting their knowledge pertaining to the gamut of available treatment modalities and assimilating an understanding of their ramifications, patients can foster a symbiotic relationship with their healthcare providers, leading to judicious and well-informed decisions vis-à-vis their healthcare trajectory. In summation, a composite strategy, encompassing surgical interventions tailored to the condition's severity and the patient's objectives proffers respite and augments the quality of life for individuals navigating the labyrinth of endometriosis.

CONCLUSION

Endometriosis, an ailment that profoundly affects the lives of countless women globally, manifests when tissue resembling the uterine lining proliferates beyond its anatomical confines. This aberration culminates in distressing symptoms, including pelvic agony, excruciating menstrual cycles, and impediments to conception. The exact cause of endometriosis is still unknown, it is commonly believed that a combination of factors and environmental influences play a role in its development. The odyssey of diagnosing and managing endometriosis presents a formidable challenge, primarily due to the elusive nature of its symptomatic manifestations. Regrettably, there exists an absence of discernible biomarkers, necessitating recourse to invasive procedures such as laparoscopy to confirm its presence. Treatment modalities encompass a spectrum of therapeutic interventions aimed at ameliorating symptoms and rectifying hormonal imbalances alongside surgical procedures meticulously tailored to target endometriotic lesions.

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