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Gynecology and obstetrics: Impacts of endometriosis on female fertility

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ABSTRACT

Introduction: Endometriosis is a chronic inflammatory pathology caused by the appearance of fragments of endometrial tissue outside the uterine cavity, which affects women of reproductive age. This condition can present with a wide variety of clinical manifestations, causing severe pelvic pain, symptoms resulting from injury to non-reproductive organs, and infertility. Studies indicate that about 30 to 50% of infertile women have endometriosis, thus suggesting a possible contribution of endometriosis in the etiopathogenesis of infertility. Therefore, in order to treat endometriosis and promote the patient's fertility, clinical and surgical treatments can be offered. Objective: This project aims to carry out a literature analysis about endometriosis and its impacts on female fertility, as well as the treatment of this condition. Methodology: this is an integrative review of the literature, carried out in the following databases: Scientific Electronic Library Online (SciELO), Web of Science and National Library of Medicine (PubMed/Medline), Google Scholar and Virtual Health Library (VHL). A total of 50 publications were identified, and 30 bibliographic references from the last 22 years were used. The exclusion criteria were non-pertinence to the theme, and articles prior to this period. The articles analyzed were selected according to the descriptors: endometriosis, infertility and reproduction. Results: considering that endometriosis is related to infertility, measures are necessary to treat this condition, for this, ablation of the lesions associated with adsiolysis, expectant management or ovarian stimulation associated with intrauterine insemination or FIVETE can be considered. Conclusion: considering that endometriosis can lead to infertility, it is of paramount importance to carry out the early diagnosis of the disease, enabling the effectiveness of the treatment of the condition and promotion of the woman's fertility.

Keywords: Endometriosis, Infertility, Treatment.

INTRODUCTION

Endometriosis is an estrogen-dependent inflammatory disease characterized by the presence of endometriosis of endometrial glands and stroma outside the uterine cavity. It is estimated that 70 million women worldwide are affected by this disease, and it has become one of the main reasons for hospitalization for gynecological reasons in several countries. Affected women experience decreased

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quality of life due to chronic pelvic pain and other clinical symptoms such as menorrhagia, dyspareunia, dysuria, and infertility (Torres et al., 2021). It was the most studied disease in gynecology in the last 15 years, even so, in Brazil, it affects about 5-15% of women in the reproductive period (Ferrero et al., 2021).

Subfertility is any form of reduced fertility with a prolonged time of not conceiving unwanted, while infertility is defined as inability to conceive after 12 months of regular sexual activity and without contraceptive use (Duarte et al., 2021). Women of childbearing age with endometriosis may be affected by decreased fertility (subfertility) or infertility. According to Bafort et al. (2020), 30% to 50% of women with endometriosis have subfertility.

Furthermore, Malvezzi et al. (2019) reported that regarding female fertility, it was suggested that 30-50% of women diagnosed with endometriosis are infertile. The clinical picture most commonly manifests itself through chronic pelvic pain, in the form of dysmenorrhea and/or dyspareunia of depth, or even through infertility or difficulty in conceiving, which assumes a multifactorial character, with different mechanisms that can interfere with physiological reproduction (Freitas et al., 2011). Risk factors for the development of endometriosis include the menacme period, reduced body mass index, women belonging to higher social classes, but with other influential factors in this aspect such as ethnicity and access to health services (Freitas et al., 2011).

The chronicity of this condition and its interference in women's quality of life should also be considered, since a chronic disease can alter the physical capacity (67.6%), work/study, household activities (64.8%) and self-esteem (53.5%) of individuals (Martins et al., 1996).

The challenges caused by endometriosis in women's health are multifaceted and complex. To effectively address this condition, a holistic approach is needed that takes into account not only medical aspects, but also psychosocial and socioeconomic factors (Kennedy, S., et al. 2005), (Vercellini, P., et al. 2014).

Thus, the objective is to analyze the literature and relate endometriosis and the impact of infertility on women's quality of life.

OBJECTIVE

This project is an integrative review of the literature, which aims to analyze the impacts of endometriosis on the development of infertility in female patients, as well as the complications caused by this condition.

METHODOLOGY

A comprehensive review of the available scientific literature on endometriosis and its effects on female fertility was conducted. This included searches in academic databases, such as PubMed, Scopus,

and Web of Science, using relevant search terms, such as "endometriosis", "female fertility", "infertility", "assisted reproduction", among others. Review studies, original articles, meta-analyses, and relevant clinical trials published in peer-reviewed scientific journals were selected.

To ensure timeliness and relevance to the theme, 50 publications were identified, and 30 bibliographic references were used. The inclusion criterion establishes the selection of articles from the last 22 years. Articles prior to this period and those that did not meet the criteria for the objective of the study were excluded.

The identified articles were evaluated for their relevance to the theme, methodological quality, and data timeliness. Studies addressing the impacts of endometriosis on female fertility, both in terms of subfertility and infertility, as well as the underlying pathophysiological mechanisms and available treatment options, were included. Thus, studies that are not directly related to the theme or that do not meet the pre-established inclusion criteria were excluded.

DEVELOPMENT

Zondervan (2020) and Da Costa (2023) highlight that endometriosis is a debilitating condition that affects approximately 10% of women of reproductive age. According to Podgaec (2020), this disease is classified as a chronic gynecological condition, characterized by the anomalous presence of tissue similar to the glandular and/or stromal endometrium outside the uterine cavity, commonly found in the pelvic and abdominal regions. The author also points out that endometriosis is a benign, estrogen-dependent and multifactorial condition.

Regarding the pathophysiology, the underlying mechanism is explained as follows: ectopic endometrial tissue responds to the menstrual cycle in a manner analogous to normal endometrium, proliferating and bleeding during each menstrual cycle. However, due to its extrauterine location, the resulting menstrual blood cannot be expelled from the body, culminating in symptoms such as dysmenorrhea, pain chronic or acyclic pelvic, profound dyspareunia, cyclic bowel disorders (including bloating, rectal bleeding, constipation, dyschezia, and anal pain during the menstrual period), and cyclical urinary disorders (encompassing dysuria, hematuria, and urinary frequency), all of which result from the inflammation triggered by this condition (ZONDERVAN, 2020).

The complexity of endometriosis poses significant challenges to the quality of life of affected women, often associated with another female pathological condition: infertility. The underlying pathophysiological mechanisms are diverse and include changes in ovarian function, tubal dysfunction, impaired egg and embryo quality, as well as changes in the uterine environment that may interfere with embryonic implantation. The severity of endometriosis, as measured by the extent and location of endometrial implants, directly correlates with the severity of the fertility problems manifested. The

chronic pain associated with the condition can also have a negative impact on women's mental health, contributing to emotional stress which, in turn, can indirectly influence fertility (SANCHEZ, 2017).

In addition to the direct effects on reproductive function, endometriosis can compromise female fertility through its implications for assisted reproductive treatments. Studies conducted by Barnhart (2002) show that women with endometriosis have reduced success rates in techniques such as in vitro fertilization (IVF) compared to those without the condition. This can be attributed to a number of factors, including oocyte quality, which is negatively affected by ovarian response, as well as embryogenesis and/or endometrial receptivity. The anatomical changes resulting from endometriosis can also hinder follicular aspiration, interfering with egg retrieval.

In this sense, it is observed that the presence of endometriosis affects several aspects of the reproductive cycle, influencing the development of the follicle, oocyte and embryo. In addition, the chronic inflammation associated with endometriosis can create an unfavorable uterine environment for embryonic implantation, even after successful fertilization, so women with endometriosis undergoing assisted reproductive treatments often face additional hurdles and may require personalized approaches to maximize their chances of reproductive success (JIANG, 2016).

According to Flyckt (2022), the multidisciplinary approach emerges as a fundamental pillar in the management of endometriosis and its consequences on female fertility. Van Niekerk (2019) and Wójcik (2022) corroborate this perspective, emphasizing the importance not only of collaboration between gynecologists and assisted reproduction specialists, but also of the involvement of professionals from other areas, such as psychologists and physiotherapists. Such integration is crucial to provide adequate support to women impacted by this condition, since psychological counseling can help in the management of the emotional stress associated with infertility and chronic pain, while physical therapy has been shown to be helpful in managing chronic pelvic pain. The synergy between these different disciplines aims not only to optimize the chances of conception, but also to promote the physical and emotional well-being of endometriosis patients.

In this scenario, the management of endometriosis in relation to infertility adopts a multifaceted approach that combines non-pharmacological, pharmacological and surgical measures, in order to optimize the chances of conception and improve the quality of life of patients. In the context of non-pharmacological measures, it is necessary to emphasize the importance of adopting lifestyle changes, including a balanced diet, regular physical exercise, and the incorporation of stress reduction techniques, such as meditation. Such practices aim to mitigate systemic inflammation and improve the health of the reproductive system, with the purpose of expanding the possibilities of conception (VITALE, 2017).

In the context of pharmacological measures, Capezzuoli (2022) clarifies that hormone therapy is widely used to manage the symptoms of endometriosis. Hormonal agents, such as oral contraceptives,

GnRH agonists, and progestins, are often prescribed to suppress ovarian hormone activity and reduce the growth of ectopic endometrial tissue. In addition, medications aimed at improving egg quality and endometrial receptivity, such as ovulation inducers and selective estrogen receptor modulators, may be considered to increase the chances of conception. However, Santulli (2021) emphasizes the importance of considering the potential side effects and limitations of each therapeutic option, especially with regard to fertility preservation. Thus, the selection of treatment should be individualized, considering the severity of symptoms, the patient's reproductive goals, and her response to available therapies (BONAVINA, 2022).

As for surgical options, removal or ablation of ectopic endometrial tissue via laparoscopy can be conducted to restore the normal anatomy of the reproductive organs and reduce inflammation associated with endometriosis. In addition, surgical interventions such as laparoscopy can correct pelvic adhesions and other anatomical complications that may affect fertility (NOGUEIRA, 2018). In selected cases, in vitro fertilization (IVF) may be recommended, especially when other therapeutic methods have failed to promote conception, however, it is imperative to consider the potential side effects and limitations of each therapeutic option, especially with regard to fertility preservation. For example, long-term use of hormonal contraceptives may delay conception after stopping treatment, while surgery may result in adhesions that further compromise reproductive function (HUANG, 2015). Therefore, the choice of treatment should be individualized, taking into account the severity of symptoms, the patient's reproductive goals, and her response to available therapies.

In summary, endometriosis, in addition to interfering with ovulatory processes and egg quality, establishes an unfavorable uterine environment for embryonic implantation, even after assisted reproduction interventions, which not only challenges women dealing with their symptoms, but also adds complexity to their reproductive health. Thus, it is highlighted that this condition can generate several impacts on female fertility, from conception difficulties to obstetric complications during pregnancy. However, through therapeutic strategies adapted to the particularities of each patient, aiming to optimize the chances of reproductive success, integrating drug therapies and advanced assisted reproduction techniques, and adopting a multidisciplinary approach that considers not only the physical, but also the emotional and psychosocial aspects of the disease, it becomes feasible to provide women affected by endometriosis with a more favorable perspective for the fulfillment of the desire for motherhood, as well as to enjoy a better quality of life (GAINDER, 2020).

FINAL THOUGHTS

Endometriosis is a complex gynecological condition that affects a significant portion of women of reproductive age, with profound impacts on quality of life, fertility, and overall well-being. From the

reviewed evidence, it is clear that there is an urgent need for increased awareness, early diagnosis, and effective treatments.

Education about the symptoms of endometriosis for both the general public and healthcare professionals is crucial, as many women suffer for years before receiving a correct diagnosis, which exacerbates the pain and complications associated with the disease. In this way, awareness campaigns can contribute to reducing this time to diagnosis and provide relief earlier for patients. In addition, endometriosis treatment should be personalized and multidisciplinary. Although laparoscopy remains the gold standard for definitive diagnosis, other options, such as hormone therapy and integrative approaches, show promise for symptom management.

Ongoing research is essential to develop new treatments that offer effective relief with fewer side effects. The relationship between endometriosis and fertility is also a critical aspect that must be addressed. Early interventions can significantly improve the chances of conception and reduce the need for more invasive and expensive fertility treatments. Finally, it is vital that we continue to fund research on endometriosis to better understand its causes, development, and best management practices. Genetic and molecular studies can reveal new therapeutic targets and offer insights into disease prevention.

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