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EFFICACY OF HORMONAL METHODS AS ONE OF THE PILLARS IN THE TREATMENT OF ENDOMETRIOSIS

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ABSTRACT

Endometriosis is a gynecological manifestation of a systemic inflammatory disease that causes chronic pelvic pain and can lead to infertility, characterized by the growth of endometrial tissue outside the uterus. This occurs due to retrograde menstruation, which consists of the leakage of part of the menstrual flow into the pelvis, and is common in 90% of women and eliminated by the immune system. However, in a portion of this population, the endometrial tissue proliferates and enters organs such as the intestine and bladder, growing during the menstrual period, which results in complications, intense pain, and incapacity in daily life. It is estimated that between 5% and 10% of women of reproductive

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age worldwide are affected by this pathology, in addition to being the second most common pelvic disorder and the most frequent cause of female pelvic pain. Endometriosis is believed to be caused by the dysregulation of the female hormones estrogen and progesterone. Thus, the regulation of these hormonal agents through the use of hormonal methods has proven efficacy, as it reduces or even eliminates estrogenic stimulation and consequently improves the quality of life of patients; since this stimulus is the main agent responsible for the growth and persistence of foci of this disease, which highlights the efficacy of this method as an important pillar in the treatment of endometriosis.

Keywords: Endometriosis. Female Hormones. Women. Hormone Therapy. Gynecological.

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INTRODUCTION

Endometriosis is a gynecological manifestation of a systemic inflammatory disease characterized by the presence of tissue similar to the endometrium but growing outside the uterine cavity. In this sense, it is known that this disease manifests itself through symptoms such as heavy menstrual flow, intense pelvic pain, and pain when urinating or defecating during menstruation and sexual intercourse, in addition to causing infertility in some cases. Thus, these symptoms lead to incapacity in the daily lives of these women, depriving them of quality of life and work productivity. (1,2)

Therefore, it is believed that endometriosis occurs as a result of retrograde menstruation, which is a common gynecological condition and consists of the leakage of part of the menstrual flow into the pelvis; in 90% of women, this flow is eliminated by the immune system. However, in people affected by this pathology, the endometrial tissue proliferates and enters organs such as the intestine and bladder, growing during menstruation, which results in complications and intense pain. In addition, it is noted that approximately 10% of the world's female population of reproductive age is affected by this disease, in addition to being the second most common pelvic disorder. (1,3,4)

Due to the complexity of this disease, its treatment can be divided into pillars: genetic, immune, oxidative inflammatory, and hormone-dependent; these pillars can be adopted individually or in combination, depending on the results obtained in the treatment. In parallel to this, according to a study carried out by the Albert Einstein Israelite Institute in 2019, it was found that the hormonal method has proven efficacy, as it reduces estrogen stimulation, the main agent responsible for the growth and permanence of endometrial foci, which highlights the effectiveness of the hormonal method, as an important pillar in the treatment of endometriosis. (1, 4, 5, 6)

Therefore, the adoption of hormonal methods consists of the use of medications that combat the dysregulation of estrogen and progesterone, because, while estrogen affects the proliferation of endometrial cells, progesterone inhibits the action of estrogen at the beginning of decidualization. Thus, medications that block the estrogenic effect, such as progestogens and GnRH analogs, are used. This alleviates or eliminates the symptoms of the disease, allowing patients to return to their routine. (5)

Despite the prevalence of this disease, approximately 65% of cases are still underdiagnosed, since this pathology does not present pathognomonic signs or symptoms of a specific pelvic disease, which can lead to an inaccurate diagnosis, delaying the

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administration of effective therapy. Associated with this is the lack of knowledge of the female population about the disease, many women choose to neglect the symptoms they feel rather than seek medical help and treatment. (1,2)

MATERIALS AND METHODS

The bibliographic method was used to gather data from scientific articles in specialized medical journals such as PUBLIMED, SCIELO, Pan American Health Organization, Google Scholar, and The Lancet, from 2019 to 2024. Using the keywords “Endometriosis”, “Female hormones”, “Women”, “Hormone therapy”, “Gynecological”, to obtain the results.

RESULTS

Hormone therapy is widely used in the treatment of endometriosis, since it is a non-surgical approach, to provide analgesia and prevent further episodes, by suppressing estrogen synthesis, reducing bleeding, and atrophy of endometrial foci. In addition, there is surgical treatment, which is defined by the patient's symptoms, extent, and location of the disease, in addition to the desire for pregnancy, age, and adverse effects. (7) In this sense, according to a study carried out by the Instituto Israelita Albert Einstein, with 238 patients diagnosed with endometriosis, after 6 months of using only hormonal treatment, 60% of those with the disorder showed a significant reduction in the pain they felt, which eliminated the need for surgical treatment. Meanwhile, only 40% of these women required surgical intervention, due to increased pain felt, increased intestinal endometrial lesions, or subocclusion of the intestine. Thus, it is observed that progestogens or combined contraceptives are the most effective treatments for this pathology, as they eliminate pain and provide quality of life to patients. (6)

For the adopted therapy to be effective, it must be defined together with the patient, to understand her needs and availability to adopt different treatment methods in her routine. This is because this disease is a manifestation of a systemic inflammatory disease, therefore, in addition to treating the main symptoms presented, it is essential to adopt measures that improve the functioning of the immune system. (8)

Therefore, it is observed that it is possible to obtain even more efficient results when hormone therapy is associated with different pillars to treat the disease, whether genetic, immune, or oxidative inflammatory. Thus, the adoption of phytotherapeutic treatment is a

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complementary and natural way to combine with conventional hormone treatment, as it presents significant improvement of the immune system. Thus, some plants have been studied in the treatment of this pathology, such as Allium sativum L. (Garlic), Curcuma longa L.A, Quercetin, omega-3 polyunsaturated fatty acids, Vitamin B. (8, 9)

According to a study carried out by the Iranian university Tehran University of Medical Sciences in 2021, with 120 women diagnosed with endometriosis, there was a significant reduction in pelvic and back pain, dysmenorrhea, and dyspareunia with the use of tablets containing garlic extract. (10)

Therefore, hormonal blockade methods are essential in the management of endometriosis, providing significant relief of symptoms and control of disease progression. The choice of appropriate treatment must be personalized, taking into account the severity of symptoms, response to previous treatment, and possible side effects. Careful management and continuous monitoring are crucial to optimize clinical results and improve the quality of life of patients. (1,9)

DISCUSSION

Lesions caused by endometriosis are found in various parts of the body, from the pelvis, the most affected area, specifically in the female reproductive system, to the abdomen and other physical structures. (3, 11, 12) Lesions outside the pelvis are rarer forms of the disease. There is a case report of a 19-year-old woman diagnosed with endometriosis in an ectopic kidney, and another study found a postmenopausal woman with the condition. A patient with a history of endometriosis, who underwent hormone replacement therapy, was diagnosed with ectopic endometriosis in the eyelid. (4, 5) Therefore, this pathology is a systemic disease and not just a condition affecting the pelvis, though the full effect of the disease is not yet fully understood. (2, 3, 4)

The etiology of endometriosis is based on various hypotheses and theories, but it is still not fully understood due to the heterogeneous nature of the pathology, which presents different forms of manifestation, affecting and evolving in varied ways. Although there are different theories to explain the cause of endometriosis, the most accepted is the retrograde menstruation theory, proposed by American gynecologist John Albertson Sampson in 1927. According to him, the menstrual blood that should be expelled after the shedding of the endometrial tissue flows back into the abdominal cavity through the fallopian tubes and implants in other locations. (1, 3, 4)

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However, retrograde menstruation is a phenomenon observed in almost all menstruating women, except for those with blocked fallopian tubes. In other words, if the endometrium backflows with each monthly menstruation, the 10% prevalence of endometriosis is very low, so it cannot be exclusively associated with this origin. There must be other ways to reach this percentage. Endometriosis is also identified outside the pelvis, in women without a uterus, and in men, which again indicates that retrograde menstruation does not represent the only route for the development of endometriosis. (4, 9)

Currently, there are other hypotheses to explain the existence of endometriosis, such as the coelomic metaplastic theory, which suggests that endometriosis may result from a metaplastic transformation in the mesothelial cells of the peritoneum, pleura, and ovaries; the genetic theory, which proposes that endometriosis arises from stem or progenitor cells that locate ectopically; and the circulatory dissemination theory, which proposes that endometriosis develops through the migration of endometrial tissue into the circulatory system, either through the blood or the lymphatic system. (9) Thus, endometriosis is a disease that is difficult to diagnose, as it does not present signs or specific symptoms for a pelvic disease, manifesting itself as other chronic diseases or chronic inflammatory processes, which delays diagnosis, the effectiveness of treatment, and consequently can lead to infertility in some cases. (1, 4)

The relationship between endometriosis and infertility is complex and involves several related mechanisms. The fallopian tubes, which capture and transport the eggs released by the ovary, can be blocked by endometrial implants, which may impair egg quality, hinder proper implantation of an embryo in the uterus, and natural conception, increasing the risk of spontaneous abortion, although the diagnosis of endometriosis is not a definitive condition for infertility. (1, 4, 13)

Another mechanism involves the formation of pelvic adhesions, which can obstruct the fallopian tubes, preventing the egg from meeting the sperm. They can also alter the position of the uterus and ovaries, making embryo implantation more difficult and causing pain during sexual intercourse. The alteration of ovarian reserve and egg quality is another mechanism, as endometriosis can cause oxidative stress in the ovaries, resulting in the production of free radicals, which damage the DNA of the eggs, hindering fertilization and embryonic development. Additionally, the presence of endometriomas in the ovaries, also known as endometriosis cysts, can reduce the number of follicles available for ovulation, especially when surgeries are needed to remove them. (1, 13)

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Altered endometrial receptivity, the ability of the endometrium to receive and nourish the embryo, is a third mechanism. Endometriosis can cause persistent inflammation in the endometrium, altering the expression of genes and molecules necessary for embryo implantation (integrins, metalloproteinases, and vascular endothelial growth factor are a few examples). These modifications may prevent the embryo from implanting in the endometrium or developing properly after implantation. (4, 13)

A fourth mechanism is the alteration of the interaction between sperm and egg. Endometriosis can alter the peritoneal environment, where fertilization occurs, changing the pH, viscosity, and concentration of substances. These changes may prevent sperm from penetrating the egg and also trigger the production of anti-sperm antibodies, which can agglutinate or immobilize sperm, preventing them from reaching the egg. (4, 13)

To categorize the stage of endometriosis, a classification of the pathology has been implemented, which considers the location, extent, and depth of the disease in the pelvis and adjacent structures. This classification was established by the American Society for Reproductive Medicine (ASRM) and is the worldwide standard for standardizing endometriosis: • Stage I: Minimal endometriosis, with small points of superficial and isolated adhesions. • Stage II: Mild endometriosis, with superficial adhesions and some deep ones (up to 5 mm). • Stage III: Moderate endometriosis, often including the presence of an isolated endometrioma or with other adhesions, superficial or dense. • Stage IV: Severe endometriosis, with severe manifestations affecting other pelvic and abdominal structures, causing significant tissue damage. (4)

However, this classification does not take into account the severity of symptoms, prognosis, response to treatment, or disease recurrence. Due to this, the ASRM system is considered insufficient because it does not correlate well with symptoms of pain, and infertility, and excludes extra-pelvic lesions. The World Endometriosis Society has published a statement highlighting the need to expand the understanding of the classification of the condition due to its broad systemic effect. (4)

Due to the complexity of this disease, there are distinct methods for its treatment, which can be divided into pillars: genetic, immune, inflammatory-oxidative, and hormone-dependent; these pillars can be adopted independently or together, depending on the symptoms presented by the patient and the evolution of the treatment. In this sense, the effectiveness of using hormonal methods in this therapy is evident, as it is considered estrogen-dependent. (9)

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This dependency can be explained by the relationship between estrogen and progesterone, as while estrogens affect the proliferation of endometrial cells, progesterone inhibits the action of estrogens at the beginning of decidualization. Thus, hormonal treatment aims to decrease or even eliminate the estrogenic stimulus – the main agent responsible for the growth and persistence of endometrial lesions – by using medications that block the estrogenic effect, such as progestogens and GnRH analogs. (1, 5)

Endometriosis has many impacts on a woman's life, from the onset of symptoms to the confirmation of the diagnosis, as episodes of intense and recurring pelvic pain during menstruation or sexual intercourse prevent a stable routine, in addition to the risk of infertility. Thus, hormonal treatments primarily aim to manage or block the hypothalamic-pituitary-ovarian axis, inducing amenorrhea and creating a hypoestrogenic environment that prevents the growth of implants and reduces pelvic pain. (14)

A widely used hormonal method involves the use of oral contraceptives, both combined and those containing only progestogens, considered first-line treatment. These contraceptives contain a combination of progestins and estrogens, providing negative feedback on gonadotropins LH (luteinizing hormone) and FSH (follicle-stimulating hormone). This suppression prevents the proliferation of both ectopic and eutopic endometrial cells. The estrogens in these contraceptives decrease estrogen production in the ovaries, while progestins exert antiproliferative effects, inhibit cytokines, and reduce resistance to progesterone in ectopic endometrial tissues. (14, 15, 16, 17)

Combined hormonal contraceptives can also include danazol, gestrinone, progestogens or their analogs, aromatase inhibitors, GnRH antagonists, and selective progestin receptor modulators. Additionally, the use of hormonal treatments, such as implantable rings or IUDs, progestins, and hormones known as GnRH analogs or GnRH antagonists, reduce the amount of estrogens produced by the ovaries and adipose cells. This reduces the growth and/or contraction of endometriosis. Hormonal treatments interrupt menstrual flow and help prevent the formation of new implants of this condition. (18)

Regarding progestins, they mimic the action of progesterone, providing negative feedback on the hypothalamic-pituitary-ovarian axis, inhibiting the production of gonadotropins, and decreasing estrogen secretion by the ovaries. This creates a hypoestrogenic environment incapable of promoting the mitotic activity of ectopic endometrial tissue. Progestins are a good option for long-term pelvic pain treatment, and for

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patients who wish to conceive, they can be administered through the intrauterine device (IUD) with progestin or by injection. (19)

Furthermore, GnRH agonists are also used as a treatment for endometriosis. These are divided into two categories: GnRH agonists and GnRH antagonists. GnRH agonists mimic endogenous GnRH and bind to pituitary receptors, initially stimulating the synthesis of gonadotropins. However, continuous administration leads to receptor desensitization, resulting in hypogonadotropic hypogonadism, a state similar to menopause, which can cause a decrease in bone mineral density (BMD). (19, 20)

GnRH antagonists, on the other hand, directly block the receptors without the initial stimulation phase seen with agonists. Both types of analogs can reduce BMD, as the resulting hypoestrogenic environment does not promote osteogenesis. To extend the use beyond the recommended six months, "ADD-BACK" therapy is used, which involves administering small doses of hormones to mitigate side effects and allow the treatment to continue for more than twelve months. (17, 21)

Selective Estrogen Receptor Modulators (SERMs) also bind to estrogen receptors and have either agonist or antagonist effects depending on the tissue. In endometrial tissues, they exhibit an antagonist effect, inhibiting the proliferation of endometrial cells. Thus, they eliminate the need to create a hypoestrogenic environment to regulate endometriosis. (17)

Additionally, there are Selective Progesterone Receptor Modulators (SPRMs), which bind to progesterone receptors in the endometrium, mimicking the action of progesterone. They promote the atrophy of endometrial cells, reducing pelvic pain associated with endometriosis. Due to their selective action, SPRMs can be used to control the symptoms of endometriosis without creating a hypoestrogenic environment. (16)

Another option used in the treatment of this condition is surgery, usually one of the last methods adopted. This invasive procedure is performed in cases of failure of prior medical treatment, and diagnosis of intestinal obstruction with a risk of obstruction or damage to other organs identified through imaging studies. In some cases, symptoms may improve with a hysterectomy, which is the surgery to remove the uterus. Depending on the severity of the disease and the patient's age, the ovaries may or may not be removed simultaneously. This surgery is generally considered when other treatments fail, and often after pregnancy. In women under 40 years old, the removal of the ovaries should be carefully evaluated, considering the risks associated with premature menopause. (18, 20)

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Currently, new therapeutic measures for endometriosis are being studied, such as acupuncture, which stimulates responses from the hypothalamic-pituitary axis, promoting the release of hormones such as beta-endorphins, cortisol, and serotonin, contributing to analgesia and reducing inflammation. (22) Additionally, future treatments being studied include the use of selective modulators for progesterone and estrogen receptors and aromatase inhibitors; there is also research seeking different biomarkers for earlier and less invasive diagnosis for the patient. Studies on different forms of treatment are important to expand treatment options and improve the patient's quality of life. (23)

CONCLUSION

Endometriosis is the gynecological manifestation of a systemic inflammatory disease. In this sense, it is unfortunately still common to associate this disease only with a gynecological pathology and that its definitive cause is infertility, which is a mistake and compromises the understanding of the causes of the disease and the search for effective treatment.

A significant portion of the world's female population has been diagnosed with this disease and many others are still unaware of the diagnosis because they do not seek treatment. Women often suffer for a long time with the painful symptoms of this disease due to complete ignorance, believing it to be a unique problem with no treatment or even fearing the diagnosis, which deprives them of their quality of life.

Therefore, this study aims to elucidate the main causes of this disease, as well as its recurrence and forms of treatment. There are different therapeutic actions currently, with the hormonal method being the most effective and used, and therefore considered an important pillar for treating this disease. In addition to hormone therapy, other pillars can also be adopted together to ensure greater therapeutic efficacy, which consists of genetic, immune, and oxidative inflammatory therapies.

In addition, hormonal methods, herbal medicines, and even acupuncture can be adopted as complementary therapies, in addition to other methods currently being studied, as a way of alleviating the symptoms of the disease. Thus, understanding the causes and effectively treating this pathology allows those diagnosed to enjoy a better quality of life, reducing or even eliminating the impacts of endometriosis on their lives.

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REFERENCES

1. Wang, P. H., Yang, S. T., Chang, W. H., Liu, C. H., Lee, F. K., & Lee, W. L. (2022). Endometriosis: Part I. Basic concept. Taiwanese Journal of Obstetrics and Gynecology, 61(6), 927-934. https://www.sciencedirect.com/science/article/pii/S1028455922002704

2. Edi, R., & Cheng, T. (2022). Endometriosis: Evaluation and treatment. American Family Physician, 106(4), 397-404. https://www.aafp.org/pubs/afp/issues/2022/1000/endometriosis.html

3. Moretto, E. E., Souza, J. P., Farenzena, L. P., Crippa, L. G., Pedrotti, M. T., Bellan, L. M., & Cunha Filho, J. S. (2021). Endometriosis. In J. N. Lubianca & E. Capp (Eds.), Promoção e proteção da saúde da mulher, ATM 2023/2 (pp. 53-64). Universidade Federal do Rio Grande do Sul. https://lume.ufrgs.br/bitstream/handle/10183/223088/001127640.pdf

4. Taylor, H. (2021). A endometriose é uma doença sistêmica crônica: Desafios clínicos e novas inovações. Lancet (Londres, Inglaterra), 397(10276), 839-852. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00389-5/abstract

5. Muraoka, A., Yokoi, A., & Kajiyama, H. (2023). Emerging bacterial factors for understanding the pathogenesis of endometriosis. iScience. https://www.cell.com/iscience/fulltext/S2589-0042(23)02816-X?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS2589004223028 16X%3Fshowall%3Dtrue

6. Andres, M. P., Mendes, R. F., Hernandes, C., Araújo, S. E., & Podgaec, S. (2019). O tratamento hormonal como terapia de primeira linha é seguro e melhora a dor pélvica em mulheres com endometriose intestinal. Einstein (São Paulo), 17, eAO4583. https://www.scielo.br/j/eins/a/4wd5M7gFTFXsnn6LDDSCmzP/?lang=pt&format=html

7. Pereira, A. C. C., Pereira, M. M. A., Vale, P. M., Silva, R. P. S., Arreguy, R. C., Melo, S. T. V., & Nogueira, T. M. (2021). Comparação entre contraceptivos hormonais combinados e progestágenos isolados na efetividade do tratamento da endometriose: Uma revisão de literatura. Brazilian Journal of Health Review, 4(2), 4081-4093. https://ojs.brazilianjournals.com.br/ojs/index.php/BJHR/article/view/25536

8. dos Santos, R. R., de Jesus, I. R., & de Aquino, E. M. (2023). Plantas medicinais usadas no tratamento de sintomas da endometriose. Revista Ibero-Americana de Humanidades, Ciências e Educação, 9(11), 3057-3064. https://periodicorease.pro.br/rease/article/view/12339

9. Amirsalari, S., Behboodi Moghadam, Z., Taghizadeh, Z., Jafar Abadi, M. N., Sabaghzadeh Irani, P., Goodarzi, S., Ranjbar, H. (2021). The effect of garlic tablets on the endometriosis-related pains: A randomized placebo-controlled clinical trial. Evidence-Based Complementary and Alternative Medicine, 2021(1), 5547058. https://onlinelibrary.wiley.com/doi/full/10.1155/2021/5547058

Revista ARACÊ
ISSN: 2358-2472

10. Chen, M., Yu, Y., & Zhao, X. (2023). Endometriosis in an ectopic kidney: A rare case report and literature review. BMC Women's Health, 23(1), 203. https://link.springer.com/article/10.1186/s12905-023-02343-x

11. DeRuyter, N. P., Kamanda, S., & Sobel, R. K. (2022). Ectopic endometriosis of the eyelid. Orbit, 41(1), 138-. https://www.tandfonline.com/doi/full/10.1080/01676830.2020.1856145

12. Lima, G. A., Ferreira, G. S., & Urbano, P. R. (2023). Infertilidade na endometriose: Abordagens diagnósticas e terapêuticas. RECIMA21 - Revista Científica Multidisciplinar, 4(1), e414404. https://recima21.com.br/index.php/recima21/article/view/4404

13. Tenezaca Bermeo, K. M. (n.d.). Endometriosis como causa de infertilidad. Revisión bibliográfica. https://www.who.int/es/news-room/fact-sheets/detail/endometriosis?gad_source=1&gclid=Cj0KCQjwlIG2BhC4ARIsADBgpVSHq9Oj-ixqwiUiJq6o4Crb9o0mVOIJkgodqEjOxFw4xFt5QIlgdq0aArl4EALw_wcB

14. Araya, N. M. (2019). Actualización en los puntos clave de la endometriosis. Revista Médica Sinergia, 4(05), 35-43. https://www.medigraphic.com/cgi-bin/new/resumen.cgi?IDARTICULO=86829

15. Brichant, G., Laraki, I., Henry, L., Munaut, C., & Nisolle, M. (2021). New therapeutics in endometriosis: A review of hormonal, non-hormonal, and non-coding RNA treatments. International Journal of Molecular Sciences, 22(19), 10498. https://www.mdpi.com/1422-0067/22/19/10498

16. Moreira, M. L., Vitório, L. L., Mazzarollo, A. V., Schiezari, B. A., de Souza, J. R., dos Santos, C. R., de Carvalho, N. C., & Vilaça, R. S. (2022). Endometriose: Fisiopatologia e manejo terapêutico. Brazilian Journal of Development, 8(11), 74540-74558. https://ojs.brazilianjournals.com.br/ojs/index.php/BRJD/article/view/54548

17. Pereira, A., Herrero-Trujillano, M., Vaquero, G., Fuentes, L., Gonzalez, S., Mendiola, A., & Perez-Medina, T. (2022). Clinical management of chronic pelvic pain in endometriosis unresponsive to conventional therapy. Journal of Personalized Medicine, 12(1), 101. https://www.pelvicpain.org/images/pdf/Patient%20Info%20Handouts%202023/Spanish/Endometriosis.pdf

18. Valle Tejero, A., Payá Amate, V., Abad Carrascosa, A., Calvo Hoyas, P., Aguilar Crespo, A., & Pellicer Martínez, A. (2019). Tratamiento a largo plazo con análogos de GnRH en pacientes con endometriosis severa. Prog. Obstet. ginecol.(Ed. impr.), 489-492. https://pesquisa.bvsalud.org/portal/resource/esSiqueira/ibc-167338

19. Baño, E. S., Alvarado, K. E., & Barrezueta, M. J. (2023). Endometriosis y calidad de vida de las mujeres. RECIMUNDO, 7(3), 12-23. https://recimundo.com/index.php/es/article/view/2078

20. Sánchez-Resendis, Ó., Ávila-Morales, J., Sánchez-Aguilar, Ó. E., & Del Valle-Jiménez, J. H. (2023). Tratamiento a largo plazo del dolor pélvico con levonorgestrel en mujeres

Revista ARACÊ
ISSN: 2358-2472

con endometriosis que desean posponer el embarazo y preservar su fertilidad: Serie de casos. 21. Ginecología y Obstetricia de México, 91(05), 307-316. https://www.medigraphic.com/cgi-bin/new/resumen.cgi?IDARTICULO=111395

22. Antunes, W. A., Guimarães, J. E., Cabral, R. S., Nogueira, L. S., & Cabral, F. D. (2021). Acupuntura no tratamento de endometriose: Revisão narrativa. Brazilian Journal of Health Review, 4(6), 23700-23713. https://d1wqtxts1xzle7.cloudfront.net/108317182/pdf-libre.pdf?1701696184=&response-content-disposition=inline%3B+filename%3DAcupuntura_no_tratamento_de_endometriose.pdf&Expires=1724212607&Signature=ThP6yg6Feh06VsRiqTRH2OuQI-R6malrelxe4KQA3DSf41G4U8gHIH3A9HC2-pfsj5SQ3YazMr9yz5qtbWkWM2QrJzWA9RKKQ4oYuNpAup3Bn4eSDAE0-rMW4YvvY9pwtdkHKUdh6L8bgQh9bDsPe0BLb1O6H69zfYSam2rp6twCIhuJYcAAItdtSRzXzMjLyBGE8VM333d8YnYgSytmr9ouym-lE4bfrWBwp1sSzqDJ-UHXyQgYpcBkvLqoxETr-GQT~z-QiVyIGNDcSF-tmHGK-HKvgV67LT5zrmUs79KtShsjldGR-bofAoeePm~98sXTN6xX7W9a-33xhXAGiA__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA

23. Sá, F. S. (n.d.). Terapia hormonal na endometriose. https://monografias.ufop.br/handle/35400000/1852