IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 13, Issue 3 Ser.3 (May. – June. 2024), PP 26-30
www.iosrjournals.org

The Impact Of Intestinal Dysbiosis On Women With Endometriosis: An Integrative Review

Mirian Farias De Oliveira Soares [1], Beatriz Caetano De Oliveira Rego [1], Andreza Moita Morais [2], Breno Da Silva Barroso [3], Alysan Gomes De Vasconcelos [3], Ivone Do Nascimento Anastacio [3], Antonia Janielly Negreiros De Moraes [4], Joaquim Ismael De Sousa Teixeira [4], Francisca Samila Pinto Romão [4], Emanuella Andrade Magalhães [1]

[1] *Anhanguera University. Sobral – Ceará.*
[2] *State University Of Piauí, Teresina - Piauí.*
[3] *Inta University Center, Sobral – Ceará.*
[4] *Vale Do Acaraú State University, Sobral – Ceará.*

Abstract
Objective: *To identify from the literature the relationship between intestinal dysbiosis and improvements or worsening of endometriosis due to the increased incidence of diagnosis.*
Methodology *: This is an integrative review of the literature. The analysis was carried out from December 2023 to March 2024. Articles published between 1998 and 2023 were included, in Spanish, English and Portuguese. For the search strategy, the combination of the terms "intestinal dysbiosis, endometriosis, microbiota, nutrition, functional foods" was used.*
Results *: The explosive growth of knowledge about the human microbiome has led to the emergence of a new hypothesis that presents an infectious origin of endometriosis. Consequently, it could be promoted by certain, but still undetermined, changes in the healthy microbiota (gut, oral and/or FGT), which have recently been associated with the risk of endometriosis, probably by disturbing the microbiota's tolerance to the immune system, thus causing a state subclinical inflammation that could allow the disease to develop.*
Conclusion *: Although preliminary, antibiotic and probiotic treatments demonstrated efficacy in treating endometriosis, and microbiota sampling successfully predicted disease risk and stage. Extensive research is still needed, particularly to characterize the "core" microbiota and elucidate the mechanisms behind the microbiota-endometriosis relationship.*
Keywords: *endometriosis; intestinal microbiota; probiotics; Functional Nutrition .*

Date of submission: 03-06-2024 Date of acceptance: 13-06-2024

I. Introduction

Endometriosis has an impact remarkable us health care and women 's quality of life , because usually causes serious symptoms , including pain pelvic chronic disease , dysmenorrhea and dyspareunia , among others [1-4].

Although the etiology of endometriosis remain in big part unknown , it seems to have one multicausal origin . Some hypotheses about the origin and pathogenesis of this illness include : adhesion and growth of fragments of endometrial tissue after uterus migration in towards the peritoneal cavity by a process of menstruation retrograde ; coelomic metaplasia (the epithelium peritoneal coelomic differentiates in cells similar to the endometrium); dissemination metastatic lymphatic or neonatal vascular stem cells somatic and peritoneal implantation that remains inactive until menarche ; and ducts Müllerians remnants embryonic abnormal (from which the upper part of the vagina, uterus and fallopian tubes develop) [5,6] . However , none of these theories demonstrated definitely one absolute causal association with endometriosis [3].

Finally , growth explosion of knowledge about the microbiome human he took to the emergence of a new hypothesis that presents one origin infectious endometriosis . Consequently , it could be promoted per certain , but still undetermined , changes in the healthy microbiota (intestinal and oral), which were recently associated to the risk of endometriosis , probably per disrupt the microbiota's tolerance to system immune system , causing so a state inflammatory subclinical that could allow the development of endometriosis [7-9]. It

is suggested that intestinal dysbiosis , for example in patients with disease celiac , be associated with inflammation , barrier function impaired and translocation microbial , possibly increasing the risk of endometriosis . However , so far none mechanism plausible he was set to explain like dysbiosis it could cause endometriosis [7, 10] .

So, in virtue of little knowledge on the impact of diet and intestinal health with the diagnosis , it was considered relevant investigate the origin of the pathophysiology endometriosis and the relationship with intestinal dysbiosis and its manifestations , how do these reactions can be overcome , what factors protect the carrier from illnesses and that interventions nutritional , surgical and medicinal he has been used . Understanding the role of food at gynecology will modify our perspective about like illnesses gynecological recurrent symptoms develop , progress and cause effects adverse significant in women , and in will guide you to develop new methods diagnostics and therapeutics pioneers to reduce your load. In addition Furthermore , the adoption of tactics preventive measures with the aim of modifying certain habits food he can improve the occurrence of a big variety of illnesses gynecological .

In this way, the study aims to identify at literature scientific the impact of intestinal dysbiosis on woman with endometriosis .

II. Methods

The gift study It consists in one revision integrative literature . This method allows searches published be synthesized in a single article , making you results more accessible . Studies of this type must be conducted through criteria methodological rigorous , following phases good described and with results clearly presented [11].

The analysis he was carried out from December 2023 to March 2024 . included articles published among years 1998 and 2023, in languages Spanish , English and Portuguese , The choice of theme and analysis initial he was carried out by two authors main ones , a advisor and co-authors additional resources to complement and finalize the work . For the search strategy he was the combination of terms " endometriosis " was used ; intestinal microbiota; probiotics ; nutrition functional ", unified with the operators Boolean "AND" or "OR".

To formulate the research question , the acronym was adopted PICo (P - population ; I - phenomenon of interest; Co - context). Thus, the research he was directed by the following question : What is the impact of intestinal dysbiosis on woman with endometriosis ?

Thus, for the selection of studies they were followed by the following steps : reading everyone 's titles you articles found ; reading the pre - selection summaries , according to inclusion and exclusion criteria ; reading , in full version of the sample articles partial ; exploration of articles ; coding of content emerging and relevant ; and presentation of results based on categories identified in the researched material [12].

For data extraction , the format was taken as a basis used by Ursi and Galvão in 2007, which foresees you following items : identification of the original article , characteristics methodologies and results found .

III. Results And Discussion

They were 63 articles analyzed being of these only 9 selected due to incompatibility of information , difficulty in obtaining results and need to pay for reading complete set of articles for the period from December 2023 to March 2024 (**Figure 1**).

Table **1** briefly presents the articles included in the final sample, covering in addition to the title of the articles, the authors and year of publication, and main results.

Table 1 - Summary of the main finds on the topic . Sobral , CE, Brazil , 2024.

AUTHOR/ YEAR	TITLE	RESULTS
Michael T. Bailey, et al. 2002 [13]	Endometriosis is associated with an altered profile of intestinal microflora in female rhesus monkeys	Our study demonstrates clearly that endometriosis it is associated with the intestinal microflora deeply changed , particularly members Gramnegative and members of the genus Lactobacillus. Although the mechanism specific why endometriosis influences the intestinal microflora needs to be investigated , it is likely that the secretion of mediators inflammatory contribute to changing the composition of the intestinal microflora. Our data therefore offers a vision unique to the pathology of endometriosis .
Baldi A, et al. 2008 [14]	Endometriosis: pathogenesis, diagnosis, therapy and association with cancer (review)	It is expected that the research biomedical us Upcoming years define methods no invasive effective to diagnose the disorder and new therapies combined with therapies medical and surgical established to offer pain relief , prevent disease

		progression and improve fertility .
Matalliotakis IM, et al 2008 [15]	A. Epidemiological characteristics in women with and without endometriosis in the Yale series.	Body habitus, habits personal characteristics and characteristics menstrual are strongly associated to the development of endometriosis . Also There may be an association between a family history of cancer and the development of endometriosis .
Uchida, M.; et al 2013 [16]	Effects of Lactobacillus Gasseri OLL2809 on induced endometriosis in rats.	In conclusion , OLL2809 has improved significantly healing endometriosis existing in rats , and two of the nine pussy have healed completely after 4 weeks of treatment . This effectiveness he was probably caused through NK cell activity by OLL2809 . Ours finds suggest the usefulness of OLL2809 on endometriosis therapy
Marc Schoeler; & Robert Caesar. 2019 [17]	Dietary lipids, gut microbiota and lipid metabolism	An intricate crosstalk links the intestinal microbiota , lipids diet and metabolism host lipid . The microbiota processes lipids and other factors nutrients to produce metabolites with impacts at homeostasis host lipid and possible effects about Law Suit pathophysiological . Studies in models gnotobiotics and genetics in mice identified mechanisms per behind these interactions , and studies in humans found associations between composition microbial , profiles lipids and disease prevalence metabolic . However , although it is It is clear that fat from different sources he has effects many different on the intestinal microbiota, the role of acids fatty specific is not known . Also yet needs to be investigated as the combination of lipids with other nutrients - such as fibers food - affects the intestinal microbiota. Although efforts have been made to understand as the default to feed affects the intestinal microbiota, the importance of food specific nutrients and combinations at profile formation microbial remains undefined . The association between diet , intestinal microbiota structure and dyslipidemia needs to be studied in big ones cohorts humanities for the development of strategies therapeutics . Given the differences individual at composition of the intestinal microbiota, it is likely that these strategies demand patient stratification and therapies based in individuals .
Ying Cao, et al. 2020 [18]	Letrozole and the Traditional Chinese Medicine, Shaofu Zhuyu Decoction, Reduce Endometriotic Disease Progression in Rats: A Potential Role for Gut Microbiota	In this study , we confirmed that modulation of the intestinal microbiota exists in pussy endometriotic and which is characterized mainly per one increased Firmicutes/Bacteroidetes ratio and abundance reduced from Ruminococcaceae . We postulate that both letrozole how much SFZYD reduced the response inflammatory tissue endometrial ectopic and eutopic , which can be related to the decrease in the Firmicutes/Bacteroidetes ratio .

Jiang I, et al. 2021 [10]	Intricate Connections between the Microbiota and Endometriosis.	Dysbiosis in the intestine and tract reproductive feminine stops the function normal immune response , leading to inflammatory to the elevate cytokines proinflammatory , compromising immunosurveillance and altering the cell profile immune . This deregulation immunological he can evolve into a state chronic inflammation , creating an ideal environment conducive to the increased adhesion and angiogenesis , which can boost the cycle vicious cycle of onset and progression of endometriosis . Studies recent he has demonstrated both the ability of endometriosis to induce changes in the microbiota, regarding the capacity of antibiotics in treat endometriosis . In general , the endometriotic microbiota it is associated with decreased Lactobacillus dominance and increased abundance of species potentially pathogenic . The Contamination Theory Bacterial and activation immunological , impaired intestinal function per cytokines , metabolism and signaling estrogenic aberrant , well like homeostasis aberrant progenitors and stem cells , are possible explanations for how dysbiosis it is implicated in this illness . Although you treatments foreplay , antibiotics and probiotics have demonstrated efficacy in treating endometriosis , and FRT microbiota sampling successfully predicted disease risk and stage . Extensive researches yet they are needed , particularly to characterize the "core" microbiota and elucidate you mechanisms per behind the relationship microbiotaendometriosis .

Source: Own author (2024).

Body habitus, habits personal characteristics and characteristics menstrual are strongly associated to the development of endometriosis [15]. Studies in models gnotobiotics and genetics in mice identified mechanisms per behind these interactions , and studies in humans found associations between composition microbial , profiles lipids and disease prevalence metabolic processes [17]. Treatment with Lactobacillus OLL2809 improved significantly healing endometriosis existing in rats , and two of the nine pussy have healed completely after 4 weeks of treatment [16].

Dysbiosis in the intestine and tract reproductive feminine stops the function normal immune response , leading to inflammatory to the elevate cytokines pro inflammatory [10]. The endometriotic microbiota it is associated with decreased Lactobacillus dominance and increased abundance of species potentially pathogenic [10]. You study results laboratory and clinical presented in this literature review confirm that the composition of the microbiome of patients with endometriosis differs from the microbiome composition of patients without that disease [20].

More research they are needed about the role of the microbiome at endometriosis . Although the mechanism specific why endometriosis influences the intestinal microflora needs to be investigated , it is likely that the secretion of mediators inflammatory contribute to altering the composition of the intestinal microflora [13].

IV. Conclusion

It is concluded that, in your majority of studies presented in this literature confirm that there is difference between the microbiome composition of patients with endometriosis and the microbiome composition of patients without that illness . There is evidence that dysbiosis in the intestine and tract reproductive feminine stops the function normal immune response , leading to inflammatory to the elevate cytokines proinflammatory , compromising immunosurveillance and altering the cell profile immune .

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