UNDERSTANDING THE COEXISTENCE OF ADENOMYOSIS AND UTERINE FIBROIDS IN PATIENTS WITH ENDOMETRIOSIS TO ENHANCE TREATMENT AND FERTILITY OUTCOMES

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ABSTRACT

OBJECTIVES

This study investigated the coexistence of adenomyosis and uterine fibroids in individuals diagnosed with endometriosis. This research seeks to contribute to understanding how these conditions interact, aiming to improve treatment strategies and enhance patient fertility outcomes.

METHODOLOGY

This study aims to evaluate 250 patients suspected of endometriosis with the help of clinical investigation and ultrasound (US). From the US study, we examined the existence of endometriosis with either uterine fibroid or adenomyosis based on patient age groups (less than 32 years, 33 to 42 years, and 43 and above). In addition, ovarian endometriosis and profoundly infiltrating endometriosis were evaluated.

RESULTS

US study diagnosed adenomyosis in 3.2% of cases, fibroids in 21.8%, and the coexistence of both fibroid and adenomyosis in 14.2% of the cases. Intranural fibroids were found at 11.4%, submucous fibroids 1.6% and subserous at 8.1% of the total. Patients with an age of more than 33 years were more affected by adenomyosis, uterine fibroids, and both adenomyosis and uterine fibroid. There was no statistically significant correlation between uterine diseases and endometriosis. Additionally, no correlation was found between endometriosis and the patient's age.

CONCLUSION

Our findings indicate that women over 32 are more likely to experience these comorbidities, complicating infertility outcomes. The significant association between adenomyosis and severe endometriosis reinforces the need for comprehensive diagnostic evaluation to inform tailored treatment plans. Future research should investigate the interactions between these conditions further to improve diagnostic and therapeutic approaches.

KEYWORDS: *Endometriosis, Adenomyosis, Infertility, Uterine Fibroids*

INTRODUCTION

Endometriosis is a complex and chronic inflammatory condition affecting 6-10% of women of reproductive age and can cause either pain or infertility.[1,2] Endometriosis is categorized into three phenotypes: deep infiltrating endometriosis (DIE), superficial peritoneal endometriosis (SUP), and ovarian endometriosis (OMA), based on pelvis ectopic tissues.[3] According to a study, approximately 30-50% of women diagnosed with endometriosis face challenges to achieve pregnancy.[4] The presence of uterine fibroids in endometriosis patients, originating from histological and surgical reports, was also reported in a study. It was found that 25.8% of the patients had uterine fibroids and were undergoing surgery for endometriosis.[5] According to a surgical report, endometriosis and adenomyosis were present in 40.4% of patients who underwent a hysterectomy for benign uterine illnesses, while endometriosis and uterine fibroids were present in 22.7%, and both problems in 34.1% of patients.[6] A cohort study determined that reproductive-age women (below 35 years of age) who have endometriosis were at high of infertility in comparison to women without endometriosis.[7] As less data is available about the occurrence of adenomyosis in women having endometriosis, the main aim of the study was to evaluate the clinical examination and analyze the sonographic prevalence of uterine fibroid and adenomyosis in endometriosis patients by considering different age intervals in Khyber Teaching Hospital, KP , Peshawar.

METHODOLOGY

The study was conducted at a Khyber Teaching Hospital, KP, Peshawar, Pakistan, on women suspected of endometriosis by clinical investigation and ultrasound from 2021-2023. After the approval of the ethical committee, patients (n=250) were subjected to transvaginal ultrasound evaluation by expert-sonographers. The patients included were of reproductive age between 25 to 45 years, having ultrasound lesions indicated endometriosis. Data collected during ultrasound and clinical investigation were analyzed, and an electronic database was created. Two expert gynecologists in gynecological ultrasound performed the scan with the help of an ultrasound machine (Voluson E8, GE). During the examination, the adnexa, uterus, and pelvic compartments were evaluated for endometriosis, uterine fibroids, and adenomyosis. Localized endometriosis lesions were defined by International Tumor Analysis (IOTA) criteria, detecting the ultrasound-homogenous "tissue" with ground glass appearance.[8] International Deep Endometriosis Analysis (IDEA) described deep infiltrating endometriosis by the appearance of spherical lesions with or without regular contours.[9] Furthermore, the adenomyosis and fibroids were defined by considering Morphological Uterus Sonographic Assessment (MUSA) criteria by well-defined circular lesions with shadows at the edge within the myometrium. Adenomyosis was described as focal, diffuse, or cystic adenomyosis by investigating an enlarged uterus with regular or irregular thickened junctional zone; interruption; ill-defined myometrial lesions, shape; no edge mixed type echogenicity with translesional vascular flow and cyst.[10] In this study, a total number of 183 patients who had US-confirmed endometriosis were investigated. The study consisted of 10% of women having a previous history of surgery for endometriosis, while the remaining women were first time suspected for endometriosis examination by clinical and ultrasound methodology.

RESULTS

A total number of 250 patients were evaluated for endometriosis, and 183 cases were confirmed with the help of ultrasound. Figure.1 presents the flowchart of the total patients and the subgroups based on the endometriosis phenotype. Gynecological comorbidities and characteristics of the uterine disorder are shown in Table 1. It was observed that uterine fibroids were in 3.2% of the patients, adenomyosis in 21.85%, while both adenomyosis and uterine fibroids coexisted in 14.2% of the total cases. Most fibroids were intramural and 11.4%, submucous were 1.6%, and subserous myomas were 8.1%. Comparing the prevalence of gynecological comorbidities based on age differences, it was determined that the patients aged> 32 years were affected more by uterine fibroids (p =0.004), adenomyosis, (p=0.031) and adenomyosis and uterine fibroids (p <0.0001). No significant correlation was found between uterine disorder and endometriosis. Moreover, also no association was found between endometriosis phenotype and patient age (Table 2 and Table 3)

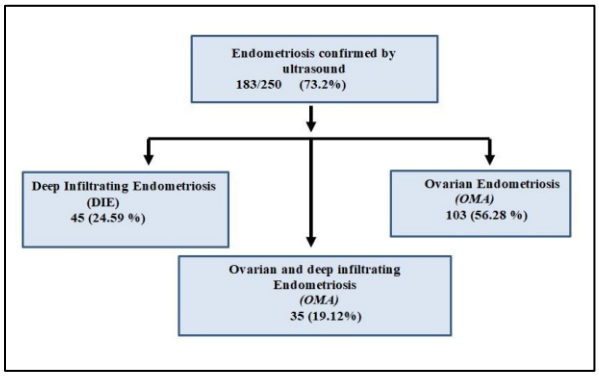

Figure 1:

Table 1: Gynecological Comorbidities in Patients with US Diagnosis of Endometriosis

Characteristics	
Mean age (years)	35.6
Uterine Disorder Comorbidities	
Uterine fibroids	6/183 (3.2%)
Adenomyosis	40/183(21.8%)
Uterine fibroid and adenomyosis	26/183(14.2%)
Types of Uterine Fibroids	
Submucous	3/183 (1.6%)
Intramural	21/183(11.4%)
Subserous	15 /183(8.1%)
Polycystic-Ovary Ultrasound Appearance	
Yes	18/183 (9.8%)
No	165/183(90.16%)

Table 2: Shows Various Pathologies and Their Prevalence When Diagnosed on CT Head

	Age < 32 years n= 84 (45.9%)	**Age >32 years < 42 years n=79 (43.17)**	**Age >42 years n= 20 (10.92)**	**P-Value**
Endometriosis Phenotypes				
OMA	47/84 (55.9%)	48/79 (60.7%)	11/20 (55%)	0.375
DIE	17/84 (20.23%)	17/79 (21.5%)	04/20 (20%)	0.872
Both OMA and DIE	20/84 (23.80%)	14/79 (17.72%)	05/20 (25%)	0.174
Uterine Disorder Comorbidities				
Uterine fibroids	15/84 (17.85%)	5/79 (6.3%)	02/20 (10%)	0.004
Adenomyosis	6/84 (7.14%)	21/79 (26.58%)	05/20 (25%)	0.031
Both Uterine fibroids and Adenomyosis	6/84 (7.14%)	15/79 (18.98%)	07/20 (31.8%)	<0.0001

Table 3: Uterine Disorder According to Phenotype in Women with Endometriosis

	Ovarian - Endometriosis (OMA) n=105 (57.7%)	Deep-infiltrating Endometriosis (DIE) n=40 (21.85%)	OMA + DIE n=38 (20.76)	P-Value
Endometriosis Phenotypes				
OMA	4/105 (2.85%)	1/40 (2.5%)	2/38 (5.2%)	0.677
DIE	25/105 (23.80%)	6/40 (15%)	8/38(21.0 %)	0.254
Both OMA and DIE	16/105 (15.23%)	5/40 (12.5%)	4/38 (10.52%)	0.486

DISCUSSION

The present study was conducted on patients suffering from adenomyosis and uterine fibroids with endometriosis for the management of infertility. Data showed the coexistence of fibroids and adenomyosis in patients older than 32. TVS imaging is a reasonably accessible imaging modality. It helped enhance the patient management of endometriosis.[11] Similar to the previous findings, it was found that the frequency of adenomyosis was 21.85% in patients with pelvic endometriosis.[3,12] Adenomyosis, uterine fibroids, and endometriosis can all have varying effects on fertility. Infertility linked to endometriosis is associated with ovarian damage, pelvic cavity alteration from inflammation and adhesions, pelvic architectural distortion, inflammatory peritoneal fluid alterations, and changed endometrium.[13] Women who have endometriosis are at high risk of infertility because of this disease.[14] Adenomyosis can result in infertility through aberrant uterine contractility, abnormal myometrial activity, and a disturbed endometrial milieu with altered expression of implantation factors.[16] Uterine fibroids also cause infertility in women.[17,18] Our results present the significant importance of the US assessment in evaluating endometriosis, adenomyosis, and uterine fibroids for better patient management. This is essential in the infertility clinic, where a comprehensive evaluation determines the best course of action for conception and a successful pregnancy outcome. Furthermore, the presence of endometriosis and uterine problems may have significant effects on patient care and the ensuing medical and surgical therapy.TVUS is required in the therapy of infertility to select the appropriate and patient-centered treatment, taking into account uterine diseases, endometriosis, and other gynecological comorbidities. Considering many factors, such as the ovarian reserve, fibroids distorting the uterine cavity, the endometriosis phenotype and pelvic anatomy, and many more, these diagnostic approaches assist the doctor in selecting appropriate treatment for the patients. Patients' personalized treatment is essential, and patients with endometriosis receive different therapy.

LIMITATIONS

The study has several limitations, including its cross-sectional design, which prevents establishing causal relationships. The sample size of 250 patients may not be representative, and reliance on ultrasound for diagnosis could underreport conditions due to its lower sensitivity. The lack of histopathological confirmation, failure to account for confounding factors, and a single-center design limit the study's accuracy and generalizability. Additionally, the absence of detailed fertility data and long-term follow-up restricts understanding of the impact on reproductive health.

CONCLUSIONS

Endometriosis is one of the foremost causes of infertility. Our study findings can help assess the patients with endometriosis, which will help in a multidisciplinary approach, better treatments, and ongoing support to relieve symptoms, maximize fertility outcomes, and enhance the patient's well-being.

CONFLICT OF INTEREST: None

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REFERENCES

1. Marchetti M, Noventa M, Panizzolo E, Pianon V, Tamagnini M, Bigardi S, Saccardi C, Tozzi R, Spagnol G. An Ultrasound-Based Preoperative Evaluation of the Endometriosis Fertility Index: A Further Step towards Personalized Treatment. J Clin Med. 2024 Mar 5;13(5):1488.
2. Tanbo T, Fedorcsak P. Endometriosis-associated infertility: aspects of pathophysiological mechanisms and treatment options. Acta Obstet Gynecol Scand. 2017 Jun;96(6):659-667
3. Chapron C, Tosti C, Marcellin L, Bourdon M, Lafay-Pillet MC, Millischer AE, Streuli I, Borghese B, Petraglia F, Santulli P. Relationship between the magnetic resonance imaging appearance of adenomyosis and endometriosis phenotypes. Hum Reprod. 2017 Jul 1;32(7):1393-1401
4. Bulletti C, Coccia ME, Battistoni S, Borini A. Endometriosis and infertility. J Assist Reprod Genet. 2010 Aug;27(8):441-7.
5. Uimari O, Järvelä I, Ryynänen M. Do symptomatic endometriosis and uterine fibroids appear together? J Hum Reprod Sci. 2011 Jan;4(1):34-8.
6. Naphatthalung W, Cheewadhanaraks S. Prevalence of endometriosis among patients with adenomyosis and/or myoma uteri scheduled for a hysterectomy. J Med Assoc Thai. 2012 Sep;95(9):1136-40.
7. Prescott J, Farland LV, Tobias DK, Gaskins AJ, Spiegelman D, Chavarro JE, Rich-Edwards JW, Barbieri RL, Missmer SA. A prospective cohort study of endometriosis and subsequent risk of infertility. Hum Reprod. 2016 Jul;31(7):1475-82.

8. Van Holsbeke C, Van Calster B, Guerriero S, Savelli L, Paladini D, Lissoni AA, Czekierdowski A, Fischerova D, Zhang J, Mestdagh G, Testa AC, Bourne T, Valentin L, Timmerman D. Endometriomas: their ultrasound characteristics. Ultrasound Obstet Gynecol. 2010 Jun;35(6):730-40.
9. Li X, Li H, Zhang H, Li G. A novel step-by-step teaching method improves training outcomes in transvaginal ultrasound for postgraduate reproductive medicine students: an exploratory randomized controlled study. BMC Med Edu. 2024 Nov 6;24(1):1270.
10. Rusda M, Adnani MR. Uterine Evaluation Using Morphological Uterus Sonographic Assessment Diagnostic Protocol: A Literature Review. Open Access Macedonian J of Med Sci. 2022 Aug 5;10(T7):209-16.
11. Andres MP, Borrelli GM, Ribeiro J, Baracat EC, Abrão MS, Kho RM. Transvaginal Ultrasound for the Diagnosis of Adenomyosis: Systematic Review and Meta-Analysis. J Minim Invasive Gynecol. 2018 Feb;25(2):257-264.
12. Di Donato N, Montanari G, Benfenati A, Leonardi D, Bertoldo V, Monti G, Raimondo D, Seracchioli R. Prevalence of adenomyosis in women undergoing surgery for endometriosis. Eur J Obstet Gynecol Reprod Biol. 2014 Oct;181:289-93.
13. De Ziegler D, Borghese B, Chapron C. Endometriosis and infertility: pathophysiology and management. Lancet. 2010 Aug 28;376(9742):730-8.
14. Tomassetti C, D'Hooghe T. Endometriosis and infertility: Insights into the causal link and management strategies. Best Pract Res Clin Obstet Gynaecol. 2018 Aug;51:25-33.
15. Barrier BF, Malinowski MJ, Dick EJ Jr, Hubbard GB, Bates GW. Adenomyosis in the baboon is associated with primary infertility. Fertil Steril. 2004 Oct;82 Suppl 3:1091-4.
16. Vannuccini S, Tosti C, Carmona F, Huang SJ, Chapron C, Guo SW, Petraglia F. Pathogenesis of adenomyosis: an update on molecular mechanisms. Reprod Biomed Online. 2017 Nov;35(5):592-601.
17. Zepiridis LI, Grimbizis GF, Tarlatzis BC. Infertility and uterine fibroids. Best Pract Res Clin Obstet Gynaecol. 2016 Jul;34:66-73.
18. Muzii L, Galati G, Di Tucci C, Di Feliciantonio M, Perniola G, Di Donato V, Benedetti Panici P, Vignali M. Medical treatment of ovarian endometriomas: a prospective evaluation of the effect of dienogest on ovarian reserve, cyst diameter, and associated pain. Gynecol Endocrinol. 2020 Jan;36(1):81-83.

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