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Assessment of quality of sexual life in women with adenomyosis

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ABSTRACT

This study aimed to assess the impact of adenomyosis (AD) on different domains of sexual life. The study population included three groups: one composed of 68 women diagnosed with AD by transvaginal ultrasound, a second group comprised by 65 women diagnosed with isolated deep infiltrating endometriosis by transvaginal ultrasound and a third group including 70 women without AD or/and endometriosis. All participants completed the Brief Profile of Female Sexual Function (B-PFSF), the Female Sexual Distress Scale (FSDS), and the Sexual Quality of Life-Female (SQOL-F) questionnaire. Compared with non-AD/DIE controls, women with AD present significantly lower scores of the B-PFSF and the SQOL-F questionnaires and higher FSDS questionnaire scores ($p < .0001$). There were no differences between the groups of AD and deep infiltrating endometriosis. Clinicians should be aware that the quality of sexual life may be affected in patients with AD. Early diagnosis and multidisciplinary management would contribute to preventing impairment of sexual quality of life in these patients.

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Introduction

Adenomyosis (AD) is a chronic benign gynecologic disease in which endometrial tissue (endometrial glands and stroma) infiltrates the myometrium causing myometrial inflammation and hypertrophy. AD is a heterogeneous disease that may present in different configurations of diffuse, focal and mixed types in the myometrium (Pinzauti et al. 2015) and affects between 20–35% of women of reproductive age (Mehasseb and Hibaba 2009). The disease leads to pain, uterine bleeding and infertility with a consequent negative impact on patient quality of life (Iacovides, Avidon, and Baker 2015). Similar to AD, endometriosis is a chronic estrogen-dependent gynecological disease characterized by the presence of endometrial glands and stroma outside the uterus. In terms of clinical appearance, there are three endometriosis phenotypes: superficial peritoneal endometriosis, ovarian endometrioma and deep infiltrating endometriosis (DIE) (Tosti et al. 2015).

There is a tight relationship between endometriosis and adenomyosis since it has been shown that both diseases share mechanisms of etiopathogenesis (Leyendecker et al. 2015) and symptoms of chronic pelvic pain and dyspareunia, which have subsequently shown to decrease the sexual function in women (Anderson et al. 2019; Sansone et al. 2018). Furthermore, sexual function is an important aspect of the overall quality of life. Studies have demonstrated that women with endometriosis, dyspareunia and impairment in sexual function have a diminished global quality of life (Schneider et al. 2020).

To our knowledge, several studies have described impairment of sexual function in patients with endometriosis (Caruso et al. 2019; Pluchino et al. 2016), especially in patients with deep infiltrating

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endometriosis (DIE) (Cozzolino et al. 2018; Evangelista et al. 2014); however, this issue has been poorly investigated in patients with AD (Andersson et al. 2019).

Adenomyosis has been described as being primarily associated with deep infiltrating endometriosis (Chapron et al. 2017). Considering that AD and DIE are similar gynecological diseases that share mechanisms of etiopathogenesis and clinical symptoms, and it is well-known that DIE decreases sexual quality of life compared with healthy women, the hypothesis of this study is that the impairment in quality of sexual life in patients diagnosed with AD is at least of the same magnitude as that of patients with DIE.

Therefore, the aim of this study was to assess the impact of AD on different aspects of women's quality of sexual life compared with a group of patients with DIE and with a group of non-AD/DIE women.

Considering the high prevalence of AD, assessment of these aspects will contribute to achieving a more effective integral management of women with AD, and alert clinicians of the importance of potential sexual dysfunction and unsatisfactory sexual relations in this setting.

Method

Study design

Between May 2018 and January 2020, a prospective, single-center comparative study was conducted at the Department of Gynecology of a university hospital in Barcelona, Spain. The primary objective of the study was to assess the impact of AD on different aspects of women's sexual quality of life using different validated clinical questionnaires, in comparison with women diagnosed with DIE and non-AD/DIE.

The study was approved by the local Clinical Research Ethics Committee, and written informed consent was obtained from all participants.

Participants

A total of 210 female patients aged 18 years or older in a premenopausal state, who were sexually active and had penile-vaginal intercourse at least once during the previous month were eligible, provided that a diagnosis of isolated AD (n = 70; AD patients), isolated DIE (n = 70; DIE patients) or normal appearance of the uterus, adnexa, and pelvic compartments (n = 70; Non-AD/DIE controls) was established by transvaginal ultrasound. The inclusion criterion for AD patients was the absence of endometriotic lesions, being the absence of AD and/or endometriomas for DIE patients and the absence of AD and/or DIE or any other gynecological condition for non-AD/DIE controls. The exclusion criteria for all participants included the presence of rheumatologic or autoimmune diseases, pelvic or lumbosacral pain caused by other conditions such as vaginismus or pelvic congestion syndrome, psychiatric disorders, a history of substance abuse, use of gonadotrophin-releasing hormone analogs or other hormonal treatments in the past 6 and 3 months, respectively, the presence of other uterine conditions (fibroids, polyps, and endometrial hyperplasia), neoplasms, the presence of other chronic diseases such as heart disease and/or diabetes, and a history of hysterectomy and/or bilateral adnexectomy.

Study procedures

All patients underwent 2D-3D transvaginal ultrasound using an endovaginal probe (type RIC5-9, Voluson V730 Expert, GE Healthcare, Milwaukee, WI, USA). The procedures were performed by two expert sonographers and diagnoses of AD and endometriosis were established according to consensus statements. The diagnosis of AD required that at least two sonographic criteria of the Morphological Uterus Sonographic Assessment consensus statement were met (Gracia et al. 2018; Van Den Bosch

et al. 2015). The diagnosis of DIE was made according to definitions and criteria of the consensus opinion of the International Deep Endometriosis Analysis group (Guerriero et al. 2016). In addition to the diagnosis of AD and DIE, the type of AD (diffuse, focal, mixed) (Pinzauti et al. 2015) and the location of DIE (Guerriero et al. 2016) were specified in the transvaginal ultrasound report. Women without AD/DIE as confirmed by a normal appearance of the uterus, adnexa, and pelvic compartments in the transvaginal ultrasound, were recruited during routine gynecologic visits for contraception or cervical cancer screening.

Study questionnaires

Sexual quality of life was assessed using the Brief Profile of Female Sexual Function (B-PFSF), the Female Sexual Distress Scale (FSDS), and the Sexual Quality of Life-Female (SQOL-F) questionnaires. The B-PFSF was developed and validated for discriminating women with hypoactive sexual desire disorder (Rust et al. 2007). The B-PFSF screening tool is a 7-item self-administered questionnaire, in which each item is scored on a 6-point Likert scale, with lower scores being indicative of poorer sexual function. A B-PFSF cutoff score of ≤ 20 is useful for discriminating presence or absence of hypoactive sexual desire disorder (Rust et al. 2007). The FSDS is a validated instrument that measures sexually-related personal distress in women (Derogatis et al. 2008). The FSDS is a 12-item self-administered questionnaire that addresses different aspects of sexual distress. Every item requires an answer that is then rated as 0–4. A cutoff score ≥ 15 indicates sexual distress. The SQOL-F was developed to assess the relationship between female sexual dysfunction and quality of life (Symonds, Boolell, and Quirk 2005). It consists of 18 items, rated on a 6-point response scale. A higher score indicates better sexual quality of life.

In all patients, sociodemographic data, anthropometric variables, gynecological information, and results of the study questionnaires were collected. Moreover, a 10-point numerical rating scale was administered to assess the current intensity of the different types of pelvic pain. In addition, a dichotomous variable ("yes"/"no") was used to assess whether moderate or severe symptoms were present as defined by a numerical rating scale ≥ 4 (Bourdel et al. 2014). Menstrual bleeding was quantified using the Pictorial Blood Loss Assessment Chart (Higham, O'Brien, and Shaw 1990).

Statistical analysis

The sample size was estimated based on previous studies of quality of life and sexual function in women with endometriosis (Caruso et al. 2015; Ferrero et al. 2005). The minimum number of patients needed in each group to obtain an α error of 0.05 and a *b* error of 0.20 was estimated as 58. Categorical variables are expressed as frequencies and percentages, and continuous variables as mean and standard deviation. The distribution of categorical variables in the AD, DIE and non-AD/DIE groups was compared with the chi-square test, and quantitative variables with the analysis of variance (ANOVA) using the post hoc Bonferroni multiple comparison test, when appropriate. In order to assess the internal validity of the B-PFSF, the FSDS, and the SQOL-F questionnaires, Cronbach alpha values were calculated, being 0.93, 0.86 and 0.67 respectively. The effects of the study variables according to sexual quality of life were evaluated in a linear multiple regression model. *B* coefficients and 95% confidence intervals were calculated. Statistical significance was set at $p < .05$. The statistical analyses were performed with the Statistical Package for the Social Sciences software, release 25.0 for Windows (SPSS, Chicago, IL, USA).

Results

Characteristics of participants

Two AD patients and five DIE patients did not wish to participate or the questionnaires were poorly filled out, and thus the final study population included 68 women diagnosed with AD, 65 diagnosed with DIE,

Table 1. Demographic and clinical data of women with and without adenomyosis (AD).

Variables	AD patients (n = 68)	DIE patients (n = 65)	Non-AD/DIE controls (n = 70)	*P* value
Age, years, mean (SD)	38.1 (5.7)	36.5 (6.0)	37 (4.5)	.044
Body mass index (BMI), kg/m^2, mean (SD)	23.2 (4.7)	23.6 (4.2)	22.9 (3.7)	NS
Education level				NS
No studies	2 (2.8)	0	2 (2.8)	
Primary	12 (17.9)	10 (18.5)	6 (8.4)	
Secondary	8 (13.0)	15 (26.1)	20 (29.2)	
University	38 (56.6)	32 (55.4)	44 (65.1)	
Married/stable relationship*	59 (88.6)	54 (82.6)	56 (82.5)	NS
Nulliparous	30 (44.1)	49 (75.4)	25 (35.7)	< .0001
Infertility	9 (13.9)	24 (35.2)	1 (1.8)	< .001
Abnormal uterine bleeding	42 (61.1)	21 (31.5)	0	< .001
Pain intensity, numerical rating scale 0–10, mean (SD) [CI 95%]				
Dysmenorrhea	4.07 (3.88) [4.01,6.18]	4.92 (3.69) [3.19,5.45]	0.38 (1.30) [0.11,1.15]	< .001
Non-menstrual pelvic pain	2.98 (3.11) [2.53,4.40]	3.11 (2.78) [1.84,3.57]	0.11 (0.61) [0.05,0.38]	< .001
Dyspareunia	2.36 (3.39) [1.73,3.90]	2.16 (3.24) [1.77,3.96]	0.04 (0.20) [0.01,0.13]	< .001
Dyschezia	1.33 (2.88) [0.33,1.81]	1.28 (2.52) [0.87,2.63]	0 [0.0,0.0]	< .001
Dysuria	1.22 (2.61) [0.53,1.98]	0.69 (2.02) [0.09,1.45]	0 [0.0,0.0]	< .001

AD: adenomyosis; DIE: deep infiltrating endometriosis; NS: not significant; SD: standard deviation; CI, confidence interval. Data as absolute numbers and percentages in parenthesis unless otherwise stated.
*the relationship is stable when the members of the couple have cohabited at least, an uninterrupted period of one year.

and 70 healthy controls. There were 49 (71.7%) with diffuse AD, 11 (16.0%) with focal AD and 8 (12.9%) with mixed AD. With regard to the DIE group, 54 (17.5%) women had posterior pelvic compartment DIE (83.1%), 2 (3.1%) anterior pelvic compartment, and 9 (13.8%) had both. Women with AD and DIE showed statistically significant differences ($p < .001$) compared to non-AD/DIE controls in relation to parity, infertility, and the intensity of different types of pelvic pain (Table 1). Abnormal uterine bleeding was significantly more frequent in women with AD than in the remaining groups ($p < .001$). None of the non-AD/DIE patients had a numerical rating scale ≥ 4 and/or abnormal uterine bleeding.

Quality of sexual life

As shown in Table 2, SQOL-F scores were lower in AD and DIE patients as compared with non-AD /DIE controls. There were no significant differences between women with AD and those with DIE. In the B-PFSF questionnaire, 36 (52.9%) women with AD and 43 (66.1%) with DIE showed a score of ≤ 20 ($p = .275$), whereas a score of ≥ 15 in the FSDS questionnaire was found in 38 (55.9%) women with AD and in 37 (56.9%) with DIE ($p = .843$).

After bivariate analysis (see Table 3), the "backward" method was performed in the linear regression model in order to predict the variables significantly associated with the dependent variable SQOL-F, which were found to be dyspareunia and dyschezia with *B* coefficients of −2.38 and −1.18 respectively.

Table 2. Quality of sexual life according to three scales.

Variables	AD patients (n = 68)	DIE patients (n = 65)	Non-AD/DIE women (n = 70)	*P* value
Brief Profile of Female Sexual Function (B-PFSF)	18.9 (6.1)	18.4 (8.1)	25.3(12.3)	< .001
Female Sexual Distress Scale (FSDS)	16.6 (9.4)	19.5 (8.8)	5.9 (6.2)	< .001
Sexual Quality of Life-Female (SQOL-F)	10.2 (10.5)	69.2 (9.5)	25.3 (4.3)	< .001

AD: adenomyosis; DIE: deep invasive endometriosis. Data as mean and standard deviation in parenthesis.

Table 3. Results of the bivariate analysis on the quality of sexual life.

	SQOL-F	*P* value
Age, r	0.024	.741
Body mass index, r	0.052	.548
Dysmenorrhea, r	−0.285	.000
Dyspareunia, r	−0.334	.000
Non-menstrual pelvic pain, r	−0.191	.009
Dyschezia, r	−0.267	.000
Dysuria, r	−0.198	.007
Educational status, mean (CI)		
University/secondary	81.8 [78.1,85.5]	.119
No studies/primary	72.7 [63.5,81.9]	
Stable relationship		
Yes	80.3 [76.7,83.8]	.538
No	77.7 [60.05,95.4]	
Live birth		
Yes	82.3 [77.6,86.9]	.065
No	77.9 [72.7,83.1]	
Sterility		
Yes	74.8 [64.3,85.4]	.250
No	80.8 [77.1,84.5]	
Abnormal uterine bleeding		
Yes	72.6 [66.2,79.1]	.022
No	83.8 [79.8,87.7]	
Diagnosis		
AD	70.0 [64.4,75.7]	.000
DIE	70.4 [63.8,77.05]	
Non-AD/DIE	96.5 [93.3,99.7]	

SQOL-F: Sexual Quality of Life-Female; r: spearman correlation; CI, confidence interval; AD, adenomyosis; DIE: deep infiltrating endometriosis.

Discussion

This study shows that sexual quality of life assessed by the B-PFSF, FSDS, and SQOL-F questionnaires in women diagnosed with AD was similar compared with DIE patients and lower compared with non-AD/DIE controls. These results are consistent with data from other studies showing sexual distress and impairment in sexual quality of life in women with endometriosis (Caruso et al. 2016).

Previous studies have assessed sexual life quality outcomes in patients with AD before and after treatment. Long *et al.* revealed that women with symptomatic AD treated with ultrasound-guided high-intensity focused ultrasound showed a reduction in the symptom severity score and visual analog scale of dysmenorrhea scores and an improvement in female sexual function index scores (Long et al. 2015). Furthermore, a pilot study evaluated health-related quality of life, sexual quality of life, severity of symptoms and menstrual bleeding at different time points after vaginal bromocriptine treatment in 23 patients, showing significant improvement in menstrual bleeding, pain and quality of life. However, in this study there were no significant differences in the female sexual function index after treatment (Andersson et al. 2019).

Endometriosis and AD are chronic benign gynecological diseases that share mechanisms of etiopathogenesis and clinical symptoms. Several studies have assessed the impact of endometriosis on health-related quality of life and sexual quality of life. In their integrative review, Marinho *et al.* assessed 26 publications on endometriosis and quality of life and concluded that endometriosis has a negative impact in all domains of quality of life, which is more associated with symptoms than to the diagnosis per se (Marinho et al. 2018). Other studies on endometriosis have concluded that long-term treatment with dienogest 2 mg improves quality of life and sexual function measured by the Short Form-36 scale and FSDS, respectively (Caruso et al. 2019).

There were no differences between the AD and DIE groups in the B-PFSF, FSDS, and SQOL-F questionnaire scores. Two gynecological chronic diseases with similar clinical symptoms can be expected to have a similar impact on the quality of sexual life.

Dyspareunia and dyschezia were significantly associated with a negative quality of sexual life, similar to findings reported in other studies (Montanari et al. 2013). The present study showed that women with DIE have impairment in sexual function, correlated with a reduction in overall well-being. Moreover, the presence of dyspareunia and vaginal endometriotic lesions seems to be involved in sexual dysfunction.

Interestingly, infertility was not associated with a poorer quality of sexual life as might be expected. Other studies (Shahraki, Tanha, and Ghajarzadeh 2018) have assessed this aspect concluding that sexual function and quality of life related to sexual life should be considered in infertile Iranian women.

Strengths of the present study include assessment of sexual quality of life in women with AD versus women without AD as controls, and also versus women with DIE. Furthermore, sexual quality of life was assessed using three validated questionnaires.

Limitations of the study include not having also used a questionnaire to evaluate the general quality of life. In fact, if AD significantly compromises sexual quality of life, it will presumably also negatively affect the global quality of life, taking into account that sexuality is an important component of health-related quality of life, as shown in studies conducted in patients with endometriosis (Caruso et al. 2020; Caruso et al. 2019; Marinho et al. 2018). For this reason, it would have been interesting to also evaluate the impact of AD on this outcome. Second, we did not perform laparoscopy in order to rule out superficial endometriosis, and this could be a bias in the study. Another limitation is the relative small sample size, which was calculated according to previous studies (Caruso et al. 2015; Ferrero et al. 2005).

Further research is needed to assess the global quality of life of women with AD and also to evaluate the quality of life and sexual function in patients diagnosed with AD and associated endometriosis, taking into account that both diseases may be associated in approximately 35% of the patients (Puente et al. 2016). Moreover, the fact of having a low quality of sexual life can negatively affect the relationship with the couple, and therefore, it would be interesting to assess the impact of AD on partner relationships.

Clinicians should be aware that the quality of sexual life may be affected in patients with AD. Targeted prevention, early diagnosis, and multidisciplinary management would contribute to preventing impairment of sexual quality of life.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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