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Willingness and Influencing Factors of Long-Term Drug Treatment in Endometriosis Patients

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Abstract: *Objective: To explore the long-term drug treatment willingness and influencing factors of endometriosis. Method: The information was collected from 200 endometriosis patients who were admitted to the gynecology clinic and ward of Shaanxi Provincial People's Hospital from June 2019 to December 2020. Data was analyzed by univariate and multivariate logistic regression analysis. The influence of age, education level, diagnosis method, pre-treatment pain score, cyst diameter, EMs disease cognition and monthly treatment cost, pain relief satisfaction after treatment, drug toxicity tolerance and drug use method on the willingness and duration of long-term drug treatment was investigated.* ***Results****: The results of multivariate logistic regression analysis showed that diagnostic methods (OR = 0.304, 95% CI 0.127 - 0.728), pre-treatment pain score (OR = 1.415, 95% CI 1.237 - 1.620) and EMs disease cognition (OR = 1.058, 95% CI 1.030 - 1.087) were the main factors affecting the treatment willingness of EMs patients, and the drug use method was a key factor affecting the treatment duration (P<0.05).* ***Conclusion****: In the future, the adequate health education should be given to the EMs patients to promote their cognitive level of disease and recognition of diagnostic methods. At the same time, patients' preferences for treatment measures should be combined to improve their long-term drug treatment willingness.*

Keywords: *Endometriosis, long-term drug treatment, treatment willingness, influencing factor*

1. Introduction

Endometriosis (EMs) is one of the common gynecological diseases, about 10% of women of childbearing age worldwide are involved, and its incidence has been increasing in recent years[1-3]. Although EMs is a benign disease, it has tumor properties such as invasion, dissemination, metastasis and recurrence, and also has malignant potential[4, 5]. At present, surgery is the main treatment for EMs, but conservative surgery is usually difficult to cure. Therefore, drug therapy is an important adjuvant therapy for EMs, and patients need long-term management after surgery. However, there is no mature and standardized long-term management plan in this regard at home and abroad. In this study, the cognition of EMs and its treatment and the willingness and needs for treatment were obtained by health education and questionnaire. On this basis, the willingness and influencing factors of patients for long-term drug treatment were explored, which can provide the basis for future clinical practice.

2. Object and Methods

2.1. Object

The EMs patients who were admitted to the gynecological clinic and ward of Shaanxi Provincial People's Hospital from June 2019 to December 2020 were selected as subjects. Patients who meet the criteria were enrolled in this study: women in adolescence, childbearing age and perimenopause who were suggested EMs cyst by B-ultrasound or MRI, with dysmenorrhea with painful nodules of posterior vaginal vault, or with sexual intercourse pain or post-sexual intercourse pain with painful tubercle of posterior vaginal dome, or EMs confirmed by laparoscopic exploration. The following patients were excluded: those of pelvic lump suggested by B-ultrasound or MRI and EMs being excluded after repeated reexamination, those of tumor malignancy suspected with the elevation of marker CA125 and HE4, those who cannot cooperate with health education and questionnaires due to various reasons.

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2.2. Methods

A qualitative research was conducted to enlist EMs patients diagnosed by clinical diagnosis and postoperative diagnosis. The patients were given health education, and the questionnaires before and after the education and review after six months were collected. After that, the relationship between the basic information (including age, educational level, diagnostic methods, pre-treatment pain score, cyst diameter and EMs disease cognition), monthly treatment cost, satisfaction of pain relief after treatment, tolerance of drug side effects, and drug use methods and patients' treatment willingness and treatment duration were analyzed. Then the status of each factor in the willingness and persistence of long-term drug treatment of EMs patients was evaluated.

2.3. Satistical Method

The data were processed by SPSS 25.0 software. The factors affecting treatment willingness and treatment duration were screened separately by univariate logistic regression, and the variables with $P < 0.05$ were included in the multivariate logistic regression model. Then the main factors affecting treatment willingness and treatment duration were analyzed by step method.

3. Results

3.1. General Data

A total of 200 EMs patients were investigated, and all of them completed the questionnaire. The data of patients before long-term drug treatment were analyzed, including age, educational level, diagnostic methods, pre-treatment pain score, cyst diameter and EMs disease cognition, as shown in Table 1.

Table 1: Basic information of research objects

Item	(*n*=200)
age (year, $\overline{x} \pm s$)	34.15 ± 7.646
educational level (number, %)	
primary school	12 (6)
junior high school	25 (12.5)
high school	45 (22.5)
undergraduate (including college)	76 (38)
master	27 (13.5)
doctor	15 (7.5)
diagnostic method (number, %)	
pathological diagnosis	50 (25)
clinical diagnosis	150 (75)
pre-treatment pain score (score, $\overline{x} \pm s$)	5.03 ± 2.703
cyst diameter (score, $\overline{x} \pm s$)	43.45 ± 7.204
EMs disease cognition (score, $\overline{x} \pm s$)	31.62 ± 14.477

3.2. Logistics Regression Analysis of Factors affecting Patients' Treatment Willingness

Table 2: Analysis of factors influencing treatment willingness

Factors	Univariate logistic regression analysis		multivariate logistic regression analysis	
	OR (95% CI)	P value	OR (95% CI)	P value
age	1.019 (1.011-1.028)	0.000	0.980 (0.942-1.020)	0.332
education level	1.231 (1.111-1.363)	0.000	0.915 (0.694-1.205)	0.527
diagnosis method	1.632 (1.173-2.260)	0.004	0.304 (0.127-0.728)	0.008
pre-treatment pain score	1.209 (1.138-1.284)	0.000	1.415 (1.237-1.620)	0.000
cyst diameter	1.016 (1.009-1.022)	0.000	0.981 (0.945-1.018)	0.306
EMs disease cognition	1.027 (1.018-1.037)	0.000	1.058 (1.030-1.087)	0.000
monthly treatment cost (RMB)		0.000		0.902
$\leq 300_{(ref)}$	1.000		1.000	
300-500	2.000 (1.290-3.100)	0.002	1.051 (0.448-2.466)	0.908
500-1000	2.263 (1.319-3.883)	0.003	1.229 (0.474-3.188)	0.672

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Univariate logistic regression analysis was performed on all the seven related factors, such as age, education level, diagnosis method, pre-treatment pain score, cyst diameter, EMs disease cognition and monthly treatment cost, which may affect the treatment willingness of the investigated objects. The results showed that the seven factors included in the statistics were all related to the treatment willingness of EMs patients. Furthermore, multivariate logistic regression analysis was performed on the seven factors, and the results showed that diagnostic methods (OR = 0.304, 95% CI 0.127 - 0.728), pre-treatment pain score (OR = 1.415, 95% CI 1.237 - 1.620) and EMs disease cognition (OR = 1.058, 95% CI 1.030 - 1.087) were the main factors affecting the treatment willingness of EMs patients, as shown in Table 2.

3.3. Logistics Regression Analysis of Factors affecting Patient Treatment Duration

According to the treatment duration, the subjects were divided into persistent long-term drug treatment group (≥ 3 months) and non-long-term treatment group (0-3 months, including the patients who refused drug treatment). With this as the dependent variable, univariate logistic regression and multivariate logistic regression were performed on the 10 factors of age, education level, diagnosis method, pre-treatment pain score, cyst diameter, EMs disease cognition, monthly treatment cost, pain relief satisfaction after treatment, drug toxicity tolerance and drug use method. The results showed that the drug use method was a key factor affecting the treatment duration (P<0.05), while the other 9 factors had no statistically significant effect on the treatment duration, as shown in Table 3.

Table 3: Analysis of factors influencing treatment duration

Factors	Univariate logistic regression analysis		multivariate logistic regression analysis	
	OR (95% CI)	P value	OR (95% CI)	P value
age	0.988 (0.980-0.996)	0.004	1.038 (0.999-1.078)	0.058
education level	0.839 (0.759-0.927)	0.001	0.894 (0.703-1.135)	0.357
diagnosis method	0.630 (0.454-0.876)	0.006	1.006 (0.508-1.994)	0.986
pre-treatment pain score	0.933 (0.888-0.981)	0.007	1.024 (0.915-1.146)	0.679
cyst diameter	0.989 (0.982-0.995)	0.001	0.976 (0.944-1.010)	0.164
EMs disease cognition	0.990 (0.982-0.998)	0.016	1.011 (0.990-1.302)	0.304
monthly treatment cost (RMB)		0.042		0.218
$\leq 300_{(ref)}$	1.000		1.000	
300-500	0.920 (0.522-1.621)	0.773	1.739 (0.782-3.871)	0.175
500-1000	0.579 (0.377-0.889)	0.012	0.904 (0.438-1.865)	0.785
pain relief satisfaction after treatment	0.660 (0.484-0.901)	0.009	1.609 (0.722-3.584)	0.245
drug toxicity tolerance	0.557 (0.358-0.805)	0.002	0.663 (0.355-1.239)	0.198
drug use method		0.002		0.049
long-term $oral_{(ref)}$	1.000		1.000	
intermittent oral	0.410 (0.229-0.734)	0.003	0.209 (0.070-0.626)	0.005
subcutaneous injection	0.651 (0.405-1.048)	0.077	0.320 (0.110-0.928)	0.036
intrauterine placement	0.606 (0.348-1.056)	0.077	0.325 (0.111-0.953)	0.041

4. Discussion

EMs is a chronic disease that can cause painful symptoms (such as dysmenorrhea, chronic pelvic pain) and infertility, and some patients even have a series of mental symptoms (such as depression and anxiety), which seriously affect the life quality of patients [6-8]. In recent years, drug maintenance in the EMs treatment to control pain and prevent recurrence has been respected, and an expert consensus has been reached [9, 10]. Meanwhile, guidelines for the diagnosis and treatment of EMs have been issued in China [10]. At Present, the long-term management principle of EMs is clinical problem-oriented, patient-centered, age-stage treatment and comprehensive treatment [11]. Therefore, understanding the willingness and influencing factors of long-term drug treatment for EMs is conducive to the implementation of targeted interventions and obtaining satisfactory treatment effects.

In this study, a total of 200 EMs patients were investigated. Through the logistic regression analysis of seven related factors that may affect the treatment willingness of the investigated objects, it was found that the diagnostic method is a crucial factor affecting the willingness of patients to receive long-term drug treatment. The possible reason is that the diagnostic method directly determines the patient's judgment on the accuracy of disease diagnosis, and the higher the patient's inner recognition of the disease state is, the easier it is to accept treatment. Meanwhile, the stronger the ability to overcome

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various difficulties encountered in disease treatment, the more able to adhere to long-term drug treatment.

The pre-treatment pain score is another major factor affecting the treatment willingness, the possible reason is that the pain score is closely related to the direct feelings of patients. And the higher the pre-treatment pain score, the more intense the physical and mental distress caused by the disease, which drives the patients to actively seek treatment and change passive treatment to active treatment. In addition, EMs disease cognition is another major factor that affecting patients' treatment willingness. This is because the full understanding of EMs disease can enable the patients to predict in advance the serious consequences that caused by non-standard and not timely treatment, so as to understand the treatment advice given by the doctor in charge. Then the patients can actively respond to the treatment plan and consciously form a united front with doctors to fight against the disease.

Furthermore, through the statistical analysis of the data of the two groups of patients who adhere to the long-term drug treatment group (≥ 3 months) and the non-long-term treatment group (0-3 months), it is found that the drug use method is the key factor affecting the treatment duration, and the difference is statistically significant ($P < 0.05$). Among them, long-term oral is the most acceptable treatment for patients, which is easier to adhere to for a long time, while the other three methods of intermittent oral, subcutaneous injection and intrauterine placement are shorter than long-term oral. The reason may be that long-term oral therapy is accurate, with mild side effects and easy to form a daily regular medication habit, and it is easy to adhere to. The common drugs for intermittent oral therapy, such as pain relievers and traditional Chinese medicines, have relatively poor efficacy. And they are often used after patients with symptoms, which may easily give patients the impression of poor efficacy, and the treatment is easily interrupted. The subcutaneous injection drugs are mainly GnRH-a drugs[12], which often have obvious menopause symptoms and osteoporosis, and obvious discomfort are caused. Intrauterine placement of drugs (Mirena) often causes persistent spotting, which affects life and causes anxiety in patients.

Usually, the pain relief satisfaction after treatment and monthly treatment cost are also important factors that affect whether patients can receive long-term treatment, but this conclusion is not reflected in the study. The possible reason is that the pain relief was roughly divided into two groups of satisfactory and unsatisfactory in the study, which affects the research precision to some extent. Moreover, regarding the monthly treatment cost, patients pay more attention to the treatment effect.

Authors' contributions

Jialan Chen contributed to the data collection and manuscript writing. Qinfeng Liu contributed to the data collection and data analysis. Fan Wang contributed to the data collection. Xin Shen helped perform the data analysis. All authors have read and approved the manuscript.

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