

Analysis of the Effects and Incidence of Adverse Reactions of Hormone Replacement Therapy for Perimenopausal Syndrome

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Abstract: *Objective:* To introduce hormone replacement therapy for patients with perimenopausal syndrome and observe its clinical application effect. *Methods:* Patients with perimenopausal syndrome were the subjects of this study, with a total of 110 participants clinically admitted from January 2022 to December 2023. Upon enrollment, patients were divided into groups based on differences in treatment modes. The observation group ($n = 55$) received routine health care combined with hormone replacement therapy, while the control group ($n = 55$) received only routine health care treatment. Evaluation criteria included psychological state, symptom scores, improvement in hormone levels, and the incidence of adverse reactions. The clinical effects of different treatment options were compared. *Results:* Post-treatment, scores of the Self-Rating Anxiety Scale (SAS) and the Self-Rating Depression Scale (SDS) in the observation group were significantly lower than those in the control group ($P < 0.05$). Additionally, the female menopausal syndrome self-diagnosis assessment scale (Kupperman) score was 12.31 ± 1.25 points in the observation group compared to 15.22 ± 1.84 points in the control group ($t = 9.7018, P < 0.05$). Furthermore, levels of follicle-stimulating hormone (FSH) and luteinizing hormone (LH) were lower in the observation group than in the control group, while estradiol (E2) and progesterone levels were higher in the observation group than in the control group ($P < 0.05$). There was no statistically significant difference in the total incidence of adverse reactions between the observation and control groups ($P > 0.05$). *Conclusion:* The application of hormone replacement therapy in Chinese medicine can improve patients' mental state, alleviate clinical symptoms, and restore hormone levels. This treatment modality is deemed safe with minimal adverse reactions, thus offering positive value.

Keywords: Hormone replacement therapy; Perimenopausal syndrome; Incidence of adverse reactions

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1. Introduction

Perimenopausal syndrome, also known as “menopausal syndrome,” encompasses a range of nervous system dysfunctions accompanied by physical and psychological symptoms. It primarily manifests in women before and after menopause, characterized clinically by fluctuations and abnormalities in sex hormones. Menopause constitutes an inevitable natural physiological stage in women's life development, marked by changes in total

menstrual volume, cycle irregularities, and ovarian function alterations, leading to hormonal imbalances and subsequent clinical symptoms such as metabolic disorders and fatigue. Moreover, the physiological changes and clinical symptoms in women during this period exacerbate psychological problems and emotional disorders ^[1].

Currently, clinical treatment of perimenopausal syndrome primarily involves a combination of conventional healthcare and hormone supplementation. Conventional healthcare predominantly addresses the psychological and physiological needs of patients, while hormone supplementation therapy focuses on selecting drugs based on individual physiological requirements. Motivated by this context, this research embarked on a controlled trial, designed to introduce a hormone replacement treatment regimen, and assessed its practical efficacy in patients with perimenopausal syndrome. This study encompassed 110 cases admitted between January 2022 to December 2023, aiming to contribute valuable insights into the management of this condition.

2. Materials and methods

2.1. General information

The study spanned from January 2022 to December 2023, during which a total of 110 patients diagnosed with perimenopausal syndrome were screened as observation subjects. Upon enrollment, patients were categorized into two groups based on distinct treatment modalities: the observation group and the control group, each comprising 55 cases. The former received routine health care combined with hormone replacement therapy, while the latter underwent routine health care treatment. In the observation group, patients' ages ranged from 44 to 55 years, with an average of 48.72 ± 2.49 years. The duration of the disease varied from 1 to 5 years, with an average of 3.02 ± 0.49 years, and the body mass index ranged from 21.5 to 28.6 kg/m², with an average of 24.64 ± 2.52 kg/m². Similarly, in the control group, patients' ages ranged from 44 to 56 years, with an average of 48.85 ± 2.64 years. The disease duration ranged from 1 to 4.5 years, with an average of 3.06 ± 0.38 years, and the body mass index ranged from 21.0 to 28.5 kg/m², with an average of 24.56 ± 2.57 kg/m². The collected data underwent uniform analysis using information technology (SPSS 22.0 system), with statistical significance found to be $P > 0.05$, indicating the data were comparable. Approval for the study was granted by the local ethics committee, with approval number 20210215.

2.2. Inclusion and exclusion criteria

Inclusion criteria:

- (1) Complete collection of all clinical data without any omissions.
- (2) Patients presenting with typical symptoms of perimenopausal syndrome (such as insomnia, palpitations, irritability, hot flashes, and sweating), confirmed through physical examination and symptom evaluation.
- (3) Absence of allergies or contraindications to the drugs involved in the study.
- (4) Understanding of the entire study process, voluntary participation, and good compliance.

Exclusion criteria:

- (1) Presence of serious underlying diseases or other complications, such as hyperthyroidism.
- (2) Presence of severe organ failure, such as heart, liver, or kidney conditions.
- (3) Presence of cognitive or communication impairments.
- (4) Inability to fully cooperate in completing the research due to other reasons.

2.3. Method

The control group received routine health care treatment, which involved assessing the patient's mental state, conducting psychological adjustments, and guiding the patient in techniques such as deep breathing and muscle

relaxation to alleviate psychological stress. Additionally, patients were advised to adopt a healthy lifestyle and diet, including regular exercise and avoiding spicy, irritating, and greasy foods.

In addition to routine health care treatment, the observation group also underwent hormone replacement therapy, specifically taking orally administered estrogen tablets (Wyeth Medica Ireland, National Drug Approval No. J20050120) at a dosage of 0.625 mg once daily for a duration of 1 month.

2.4. Observation indicators

- (1) Mental state: Mental state assessment was conducted before and after treatment (initial review at the end of treatment) using the Self-Rating Anxiety Scale (SAS) and the Self-Rating Depression Scale (SDS) ^[2]. Each scale comprises 20 assessment items, with SAS and SDS having score cut-off values of 50 and 53 points, respectively. Higher scores indicate more severe psychological anxiety and depression.
- (2) Symptom score: Symptom evaluation, measured concurrently with mental state assessment, utilized the Kupperman scale ^[3]. This scale assesses 12 symptoms including anxiety, fatigue, and insomnia, with scores ranging from 0 to 51. Elevated scores indicate more pronounced symptoms.
- (3) Hormone levels: Hormone levels were measured simultaneously with the above indicators using a fully automatic biochemical analyzer (Cobas C312, Roche, Switzerland). Fasting venous blood samples were collected for analysis, with detection items including follicle-stimulating hormone (FSH), estradiol (E2), progesterone (P), and luteinizing hormone (LH).
- (4) Incidence rate of adverse reactions: Throughout the treatment period, patients were followed up and observed for adverse reactions, with the types and number of reactions (e.g., gastrointestinal reactions, dizziness) recorded. The total incidence rate was calculated.

2.5. Statistical analysis

Statistical analysis was conducted independently using computer processing and inputting research data into the SPSS 20.0 system. Counting data were statistically analyzed with chi-squared tests and expressed as %, while measurement data conforming to normal distribution were analyzed with *t*-tests and expressed as mean \pm standard deviation (SD). Statistical significance was determined as $P < 0.05$, indicating the presence of a statistical difference.

3. Results

3.1. Mental state

Table 1 shows that the SAS and SDS scores of the observation group were lower than those of the control group after treatment ($P < 0.05$).

Table 1. Psychological state analysis (mean \pm SD, points)

Group	SAS		SDS	
	Before treatment	After treatment	Before treatment	After treatment
Observation group ($n = 55$)	57.45 \pm 3.56	38.42 \pm 2.18*	60.24 \pm 4.58	37.54 \pm 3.27*
Control group ($n = 55$)	57.37 \pm 3.74	40.24 \pm 2.86*	60.37 \pm 4.55	40.66 \pm 3.73*
<i>t</i>	0.1149	3.7533	0.1493	4.6646
<i>P</i>	0.9087	0.0003	0.8816	0.0000

Note: Compared with this group before treatment, * $P < 0.05$.

3.2. Symptom score

Post-treatment, the Kupperman score of the observation group was lower than that of the control group ($P < 0.05$), as shown in **Table 2**.

Table 2. Symptom score assessment (mean \pm SD, points)

Group	Kupperman		<i>t</i>	<i>P</i>
	Before treatment	After treatment		
Observation group (<i>n</i> = 55)	2 5.52 \pm 3.84	12.31 \pm 1.25	24.2595	0.0000
Control group (<i>n</i> = 55)	2 5.58 \pm 3.82	15.22 \pm 1.84	18.1205	0.0000
<i>t</i>	0.0821	9.7018	-	-
<i>P</i>	0.9347	0.0000	-	-

3.3. Hormone levels

Table 3 shows that after treatment, the FSH and LH levels of the observation group were lower than those of the control group, while the E2 and P levels were higher than those of the control group ($P < 0.05$).

Table 3. Hormone level assessment (mean \pm SD)

Group	FSH (U/L)		E2 (mmol/L)	
	Before treatment	After treatment	Before treatment	After treatment
Observation group (<i>n</i> = 55)	24.23 \pm 6.85	12.17 \pm 4.41*	80.84 \pm 10.48	124.54 \pm 13.07*
Control group (<i>n</i> = 55)	24.35 \pm 6.91	16.04 \pm 5.26*	80.87 \pm 10.45	103.66 \pm 11.73*
<i>t</i>	0.0914	4.1812	0.0150	8.8174
<i>P</i>	0.9273	0.0001	0.9880	0.0000

Group	P (pmol/L)		LH (U/L)	
	Before treatment	After treatment	Before treatment	After treatment
Observation group (<i>n</i> = 55)	2.62 \pm 0.48	3.97 \pm 0.62*	16.57 \pm 3.53	11.62 \pm 2.12*
Control group (<i>n</i> = 55)	2.59 \pm 0.44	3.12 \pm 0.55*	16.64 \pm 3.49	13.24 \pm 2.61*
<i>t</i>	0.3416	7.6059	0.1045	3.5864
<i>P</i>	0.7333	0.0000	0.9169	0.0005

Note: Compared with this group before treatment, * $P < 0.05$.

3.4. Incidence of adverse reactions

Table 4 shows that there were no statistically significant differences between the two groups when comparing the total incidence of adverse reactions ($P > 0.05$).

Table 4. Adverse reaction incidence statistics [*n* (%)]

Group	Gastrointestinal reactions	Dizziness	Overall incidence
Observation group (<i>n</i> = 55)	1 (1.81)	1 (1.81)	2 (3.63)
Control group (<i>n</i> = 55)	0	0	0
χ^2	-	-	2.0370
<i>P</i>	-	-	0.1535

4. Discussion

The pathological mechanism of perimenopausal syndrome is relatively complex, primarily stemming from hypothalamic-pituitary dysfunction triggered by ovarian dysfunction and declining serum hormone levels. This condition manifests in symptoms such as fatigue, hot flashes, and metabolic disorders, while also impacting the patient's psychological and emotional state due to prolonged estrogen level imbalances and physiological dysfunction, resulting in a detrimental cycle. Current clinical treatment for perimenopausal syndrome relies on conventional healthcare interventions, including psychological counseling, dietary control, and lifestyle guidance. While these measures offer some relief, they often fall short of providing an optimal outcome, necessitating the exploration of more effective and safer treatment modalities ^[4].

In recent years, hormone replacement therapy has emerged as a promising approach in the clinical management of perimenopausal syndrome, yielding favorable outcomes ^[5]. This therapy aims to alleviate menopausal symptoms by supplementing estrogen, progesterone, and other hormones in perimenopausal women with estrogen deficiency. By enhancing estrogen levels, hormone replacement therapy effectively mitigates symptoms associated with ovarian function decline and corrects related manifestations stemming from insufficient estrogen secretion and other factors. Consequently, it reduces patients' anxiety, depression, and other negative emotions while promoting their recovery ^[6]. Among the options for hormone replacement therapy, estrogen tablets, predominantly composed of conjugated estrogen extracted from pregnant horse urine, are commonly used due to their efficacy and safety profile ^[7].

In this study, the observation group received combined hormone replacement therapy alongside routine healthcare treatment, with estrogen tablets as the therapeutic agent. This combined approach facilitated psychological counseling, dietary modifications, and lifestyle interventions to enhance patients' overall well-being and foster healthier habits ^[8]. Concurrently, hormone replacement therapy regulated serum hormone levels, alleviated clinical menopausal symptoms, and effectively managed patients' conditions, thereby positively impacting their psychological state and prognosis. Notably, the therapeutic ingredients of hormone replacement therapy demonstrated a low incidence of adverse reactions, enhancing patient comfort and acceptance while achieving superior clinical efficacy ^[9].

A study by Lu involving 96 perimenopausal syndrome patients further supports the effectiveness and safety of hormone replacement therapy ^[10]. The data showed that 48 patients in the research group received additional treatment based on routine health care. After hormone replacement therapy, the Kupperman score after treatment was 12.81 ± 3.15 points, and the incidence of adverse reactions was 4.17%. The 48 patients in the control group only received conventional healthcare treatment, and the Kupperman score after treatment was 15.06 ± 3.46 points, and no adverse reactions occurred. It illustrates the effectiveness and safety of hormone replacement therapy for patients. The conclusion is similar to this study.

In conclusion, for patients with perimenopausal syndrome, combining routine healthcare with hormone replacement therapy offers an effective strategy to alleviate negative emotions, manage the condition, and improve hormone levels with minimal risk of adverse reactions. This approach holds significant clinical value and warrants consideration and application in clinical practice.

Disclosure statement

The author declares no conflict of interest.

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