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Study on the Efficacy of Aspirin Combined with Prednisone in the Treatment of Recurrent Spontaneous Abortion

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Abstract: *This paper aims to study the efficacy of aspirin combined with prednisone in the treatment of recurrent spontaneous abortion. This research officially started in March 2021 and ended in March 2022. 72 patients with recurrent spontaneous abortion admitted to our hospital during this research period were selected as the observation objects. They were divided into two groups according to the order of admission: a control group and an experimental group. The control group received routine treatment, and the experimental group received aspirin combined with prednisone treatment. The observation indicators and pregnancy outcomes of the two groups of patients were compared before and after treatment. There was no significant difference in coagulation function, IL-4, hormones, endometrial receptivity, and immune function indicators between the two groups of patients before treatment (P>0.05). After treatment, the research indicators of both groups of patients were effectively improved, but the improvement degree of the experimental group was significantly better than that of the control group, and the pregnancy outcome of the experimental group was better (P<0.05). Conclusion: Aspirin combined with prednisone treatment can achieve ideal efficacy in patients with recurrent spontaneous abortion, and is worthy of clinical promotion.*

Keywords: *recurrent spontaneous abortion (RSA), medication, curative efficacy*

1. Introduction

RSA usually means that one pregnant woman has had two or more spontaneous abortions. Its causes are complex, the common causes are chromosome abnormalities, uterine anatomical structure abnormalities, infectious diseases, endocrine abnormalities, etc. With the development of the times and the changes in people's lifestyles and habits, the incidence of RSA has gradually increased in recent years, bringing enormous pressure to the family stability and mental health of such patients. Currently, medication is commonly used to treat RSA. In order to compare the efficacy of different treatment methods, our hospital has conducted the research.

2. Research materials and methods

2.1. General Information

This research selected 72 patients with RSA who treated in our hospital from March 2021 to March 2022 as the research objects and divided them into two groups. The control group (n=36) had patients with a minimum age of 23 years and a maximum age of 35 years, with an average age of 27.12 ± 0.98 years. Their abortion times ranged from 2 to 5, with an average age of 3.32 ± 0.51 times. The experimental group (n=36) had patients ranging in age from 22 to 35 years old, with a mean of 27.09 ± 0.93 years old, and had 2 to 4 times of abortion, with a mean of 3.30 ± 0.47 times. There was no significant difference in basic data between the two groups of patients (P>0.05). Note: This research is public and transparent, and all patients had been informed and consented this research before participating.

Inclusion criteria: (1) Patients with 2 or more spontaneous abortions. (2) Patients with normal chromosomes in both spouses and previous embryos.

Exclusion criteria: (1) Patients with reproductive tract abnormalities. (2) Patients with ingredient allergies or intolerance to the medication used in this study. (3) Patients with severe infectious diseases

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and cannot participate in this research.

2.2. Research methods

Medical staff need to provide medication guidance to the two groups of patients before taking medication, informing them of the medication usage method, daily medication frequency, dosage, and precautions during the medication process.

2.2.1. Control group

Routine treatment: After pregnancy, the patient's serum progesterone and chorionic gonadotropin levels are measured, and combined with the measurement results, routine fetal protection treatment is administered to the patient, including progesterone, Gushen Antai pills, etc. [1]

2.2.2. Experimental group

The patients were given aspirin (specification: 100mg*30S, national drug approval number: J20130078, manufacturer: Bayer Healthcare Co., Ltd.) for treatment[2], the medication frequency is 100mg once a day. On this basis, additional prednisone (specification: 5mg/S, national drug approval number: H33021207, manufacturer: Zhejiang Xianju Pharmaceutical Co., Ltd.) is used for treatment[3], the medication frequency is once a day and the dosage is 5mg per session. Continuous treatment lasted for 3 months, during the treatment period, contraception was performed. After 3 months, the contraceptive doctor's order was removed, and the dosage of aspirin was adjusted to 20mg per session and prednisone to 2.5mg per session until 3 months after pregnancy[4].

2.3. Observation indicators

(1) The level of coagulation function in both groups of patients, indicators include PT, TT, APTT and FIB.

(2) IL-4 levels in two groups of patients.

(3) Patients' hormone levels, indicators include E2, HCG, and P.

(4) Endometrial receptivity levels in both groups of patients, indicators include uterine artery blood flow RI, PI and endometrial thickness.

(5) The immune function levels of two groups of patients, indicators include CD4+, CD8+ and INF-γ.

(6) Patients' pregnancy outcomes.

2.4. Statistical analysis

To ensure the authenticity and reliability of the data obtained in this research, all the data were input into the SPSS21.0 system software for calculation, with (%) as the counting unit, X2 for testing, (± s) for econometric statistics, and t-value for testing. If the obtained results indicate $p<0.05$, it is proved that there is a statistically significant difference between the two groups.

3. Research results

3.1. Coagulation function levels

Table 1: Coagulation function levels of two groups($\bar{x}$ ±s)

Group	PT(t/s)		TT(t/s)		APTT(t/s)		FIB(pb/L)	
	Before	After	Before	After	Before	After	Before	After
Control group (n=36)	11.71±1.73	12.36±1.54	17.51±2.41	13.42±2.41	19.55±2.73	25.73±3.02	4.77±0.79	3.21±0.52
Experimental group (n=36)	11.68±1.68	13.72±1.73	17.46±2.50	15.75±2.01	19.49±2.81	28.82±4.81	4.80±0.76	2.55±0.39
t	0.075	3.523	0.086	4.455	0.092	3.264	0.164	6.092
p	0.941	0.001	0.931	0.000	0.927	0.002	0.870	0.000

According to the data provided in Table 1, the pre-treatment data of the two groups were similar

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(P>0.05), and after treatment, the indicators of the experimental group were significantly superior than those of the control group (P<0.05), as shown in Table 1.

3.2. Interleukin-4 and immune function levels

From Table 2, it can be seen that after treatment, the IL-4 levels in the experimental group were significantly higher than those in the control group (P<0.05), as shown in Table 2.

Table 2: IL-4 and immune function levels of patients ($\bar{x}$ ±s)

Group	IL-4(ng/L)	
	Before	After
Control group(n=36)	171.78±28.79	182.11±30.11
Experimental group(n=36)	171.97±29.02	199.71±37.06
t	0.028	2.212
p	0.978	0.030

3.3. Hormone levels

From Table 3, it can be seen that after treatment, the E2 levels, HCG levels, and P levels in the experimental group were on average higher than those in the control group (P<0.05), as shown in Table 3.

Table 3: Hormone levels in control and experimental group patients ($\bar{x}$ ±s)

Group	E2(ng/L)		HCG(IU/L)		P(μg/L)	
	Before	After	Before	After	Before	After
Control Group (n=36)	361.23±42.15	411.15±33.21	976.46±99.79	6012.45±426.45	8.33±0.87	22.45±2.51
Experimental group (n=36)	362.47±41.78	458.79±37.15	977.45±99.45	6879.15±745.13	8.26±0.90	27.93±3.42
t	0.125	5.736	0.042	6.057	0.336	7.751
p	0.901	0.000	0.967	0.000	0.738	0.000

3.4. Endometrial receptivity levels

After treatment, the levels of RI and PI in the subendometrial artery of both groups of patients decreased, and the thickness of the endometrium increased. However, the improvement of indicator levels in the control group was significantly lower than that in the experimental group (P<0.05), as shown in Table 4.

Table 4: Endometrial receptivity levels of patients in the control and experimental groups before and after treatment($\bar{x}$ ±s)

Group	RI		PI		Endometrium thickness(mm)	
	Before	After	Before	After	Before	After
Control group(n=36)	0.88±0.07	0.75±0.05	2.58±0.32	2.09±0.26	6.44±0.85	7.13±1.05
Experimental group(n=36)	0.87±0.10	0.62±0.04	2.61±0.28	1.77±0.21	6.48±0.91	7.76±1.21
t	0.492	12.182	0.423	5.745	0.193	2.359
p	0.625	0.000	0.673	0.000	0.848	0.021

3.5. Immune function levels

According to Table 5, it can be seen that patients' CD4+ and INF-γ indicators in the control group were higher than those in the experimental group, while the CD8+ indicators were lower than those in the experimental group. There was a significant difference in data between the groups (P<0.05), as shown in Table 5.

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Table 5: Immune function levels of patients in the control group and experimental group before and after treatment($\bar{x}$ ±s)

Group	CD4+(%)		CD8+(%)		INF-γ(ng/L)	
	Before	After	Before	After	Before	After
Control group(n=36)	43.77±3.82	39.77±3.85	32.46±4.55	35.46±4.32	194.46±33.16	174.46±22.45
Experimental group(n=36)	43.68±3.85	36.25±2.57	32.51±4.53	38.96±4.40	194.53±33.11	150.98±22.46
t	0.100	4.563	0.047	3.406	0.009	4.436
p	0.921	0.000	0.963	0.001	0.993	0.000

3.6. Pregnancy outcomes

The pregnancy outcomes of the experimental group were significantly better than those of the control group (P<0.05), as shown in Table 6.

Table 6: Pregnancy outcomes of patients in the control group and experimental group[n(%)]

Group	Full-term delivery	Premature live baby	Premature dead baby	Abortion	Live birth rate
Control group(n=36)	12(33.33)	14(38.89)	6(16.67)	4(11.11)	26(72.22)
Experimental group(n=36)	19(52.78)	14(38.89)	1(2.78)	2(5.56)	33(91.67)
X2	1.956	0.000	0.629	0.099	6.168
P	0.162	1.000	0.428	0.753	0.013

4. Discussion

RSA is one of the common diseases in pregnant women, which is closely related to factors such as the patient's immune system and endocrine abnormalities. The main symptoms are pathological hypercoagulability and placental circulation disorders. If patients do not receive timely and effective treatment, they are often prone to recurrent abortion[5].

The commonly medicine for routine treatment are progesterone and Gushen Antai pills. Progesterone has a significant effect on women, and its use in the later stages of menstruation can promote the growth of glands in the patient's endometrium, cause uterine congestion, increase endometrial thickness, and prepare for fertilized egg implantation[6]. The use of it by pregnant women can effectively reduce the degree of uterine excitement during pregnancy, inhibit uterine activity, and ensure safe fetal growth in the body. This drug is mainly used in clinical practice for the protection of pregnancy in RSA patients and the treatment of amenorrhea women[7]. Long-term use of this drug may induce gastrointestinal irritation symptoms such as nausea and vomiting, and some patients may also experience allergic urticaria[8].

Gushen Antai pills is a kind of prescription medicine and can only be used under the condition of following medical advice in a regular hospital. Its main ingredients are Polygonum multiflorum and Rehmannia glutinosa, etc. Its functions include nourishing yin and tonifying the kidneys and calming the fetus. It is mainly used in patients with early threatened abortion. The drug is generally well tolerated, with fewer adverse reactions, and patients may occasionally experience gastrointestinal reactions such as loss of appetite. The symptoms are mild and can disappear after stopping the medication. The combination of progesterone and Gushen Antai pills can improve various indicators of the body in RAS patients to a certain extent.

Aspirin is a non-steroidal anti-inflammatory drug that can inhibit the activity of prostaglandin synthase in patients, reduce TXA2 production, and have a certain antagonistic effect on platelet aggregation. It can effectively prevent thrombosis and improve local blood circulation in patients when given treatment with this drug[9]. Aspirin also has a strong inhibitory effect on physiological cyclooxygenase and enzyme-1 in the human body, which can inhibit the synthesis of prostaglandins in the patient's body tissue, relax muscle tone, and achieve the effect of inhibiting uterine spasmodic contraction[10]. Scholars have also shown in research that RSA patients who take aspirin experience hydrolysis in the body, effectively producing salicylic acid and acetic acid, which can inhibit embryonic abortion in the body and effectively improve pregnancy outcomes[11].

Prednisone tablets are a common glucocorticoid drug that can effectively anti-inflammatory and regulate immune imbalance, and have a wide range of clinical applications. The implementation of

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prednisone treatment for RSA patients can effectively improve the patient's placental blood circulation, ensure normal material exchange between the patient and the fetus, and effectively stimulate the placenta to form the necessary factors for placental growth[12]. Scholars have shown that the combination of aspirin and prednisone has a better effect. According to the results of this research, it can be seen that compared to conventional treatment, aspirin combined with prednisone treatment has significantly improved coagulation function indicators and IL-4 in RSA patients, and effectively regulated immune function levels, hormone levels, and endometrial receptivity levels, resulting in better pregnancy outcomes.

As for the RSA group, the following points need to be achieved during pregnancy treatment to effectively improve prognosis: ①To maintain a healthy lifestyle: Patients need to rest regularly during pregnancy, try not to stay up late, and maintain sufficient sleep time. High quality sleep can positively affect body function and reduce the occurrence of recurrent miscarriage[13]. At the same time, patients also need to pay attention to a balanced diet, supplement more nutritious foods, and supplement the necessary trace elements in an appropriate amount to improve the body's immune capacity and reduce the occurrence of recurrent abortion caused by infection with bacteria[14]. ②To eliminate smoking and alcohol abuse: Pregnant women who have a habit of smoking and alcohol abuse in their daily lives, if they still maintain bad habits during pregnancy, it can cause damage to their own liver which controls the metabolism of the human body. Once the liver is damaged, it is easy to experience metabolic disorders in the body, which can affect the normal growth and development of the fetus and the ability to obtain nutrients from the mother, leading to recurrent abortion[15]. Therefore, it is important for the RSA group to quit smoking and alcohol during pregnancy preparation, otherwise it will have a serious negative impact on the normal development of the fetus.[16] ③To improve self-awareness: Many patients have a low level of awareness about recurrent spontaneous abortion. Medical staff can also explain the causes of the disease, treatment methods, and related precautions and contraindications during treatment to patients to improve their understanding of the disease, and assist in improving their treatment compliance and efficacy[17]. During the treatment period, patients need to control their emotions and maintain a positive attitude to avoid negative emotions such as anxiety and negativity affecting the treatment efficacy. ④Regular examination: There are various reasons that can induce recurrent abortion in patients, so they should also develop the habit of regular examination during treatment. Patients need to understand the levels of various indicators in their own body, as well as the changes in indicators compared to the last examination, understand the treatment effect, timely detect and treat abnormal indicators in the body, and reduce the difficulty of treatment[18].

In summary, applying aspirin combined with prednisone treatment to pregnant women with recurrent spontaneous abortion can achieve ideal therapeutic effects and is worthy of clinical application and promotion.

References

[1] Omda E, A. F, Fattah E A, et al. Combined Low Dose Aspirin and Steroids vs Aspirin Only in Management of Unexplained Recurrent Miscarriage [J]. The Egyptian Journal of Hospital Medicine, 2019, 75(5).

[2] Hongxia Liu. The effect of low-molecular-weight heparin combined with aspirin on the maternal and fetal outcomes and thrombotic test indicators of recurrent miscarriage caused by PTS [J]. Journal of Aerospace Medicine, 2022, 33 (3): 274-276

[3] Huicai Zhang, Yinxia Cheng, Jing Wang. The clinical application value of low molecular weight heparin sodium combined with aspirin in the treatment of recurrent miscarriage [J]. Journal of Mathematical Medicine and Pharmacy, 2022, 35 (2): 272-275

[4] Jingjing Zong, Heyue Li, Minghui You, et al The effect of Gushen Antai Pill combined with prednisone and aspirin in the treatment of recurrent miscarriage and its effect on the imbalance of helper T cell 17/regulatory T cell [J]. Chinese Sexual Science, 2022, 31 (8): 57-61

[5] Chunling Wang. Analysis of the efficacy of low-dose aspirin combined with low molecular weight heparin calcium, progesterone, and dexamethasone in the treatment of recurrent miscarriage with hyperhomocysteinemia [J]. Modern Drug Applications in China, 2021, 15 (19): 23-25

[6] Samira E, Asma K, Akram V, et al. The hormone-sensitive lipase C-60G polymorphism is correlated with recurrent spontaneous abortion in women with polycystic ovary syndrome [J]. Gene Reports, 2023, 32.

[7] G P. [Preliminary recommendations for the use of progestins and progesterone. A first for a health agency: Is the precautionary principle going to replace evidence-based medicine?][J]. Gynecologie,

ISSN 2706-6819 Vol.5, Issue 11: 17-22, DOI: 10.25236/IJFM.2023.051103

obstetrique, fertilite & senologie, 2023, 51(10).
[8] Mingzhu Ao, Haihua Yu. The effect of aspirin combined with prednisone in the treatment of recurrent miscarriage and its impact on patient immune balance and pregnancy outcome [J]. Chinese Journal of Family Planning, 2023, 31 (3): 575-580
[9] Yumei Liu, Chunqing Hu, Xiaoyong Tang, et al The effect of aspirin combined with glucocorticoids on recurrent miscarriage and its impact on vWF, PAI-1, and coagulation related indicators in pregnant women [J]. Chinese and Foreign Medical Research, 2021, 19 (4): 13-16
[10] Yang Shi, Wanzeng Ma, Yanhong Feng, et al Gushen Antai pill assisted with prednisone and aspirin in the treatment of unexplained recurrent miscarriage and its effects on peripheral blood immune cells, FDP, and D-D [J]. Chinese Journal of Family Planning, 2022, 30 (8): 1734-1739
[11] Hong Li, Xia Guo. The clinical efficacy of aspirin combined with low molecular weight heparin in the treatment of recurrent miscarriage complicated with antiphospholipid syndrome [J]. Clinical Medical Research and Practice, 2021, 6 (27): 138-139,155.
[12] Yinhua Liang. The efficacy of aspirin combined with low-molecular-weight heparin as an adjuvant therapy for unexplained recurrent miscarriage and its effects on estradiol γ- The impact of interferon [J]. Journal of Mathematical Medicine and Pharmacy, 2022, 35 (5): 738-740
[13] Linling Mo, Dan Peng, Jinling Song, etc. Study on the efficacy and immunomodulatory effect of low molecular weight heparin and low-dose aspirin in the treatment of recurrent abortion with pre thrombotic state [J]. Chinese Sexual Science, 2022, 31 (9): 81-85
[14] Liangyan Zhou. The effect of low-molecular-weight heparin combined with aspirin treatment on the expression level of D-dimer fibrin degradation products and pregnancy outcomes in patients with recurrent miscarriage [J]. China Maternal and Child Health, 2021, 36 (17): 4016-4019
[15] Xiaosun Li, The effect of low-molecular-weight heparin combined with aspirin on the survival rate, hemorheology, and pregnancy outcome in patients with recurrent miscarriage [J]. Journal of Shanxi Health Vocational College, 2022, 32 (2): 8-9
[16] Ruifan Wang, Na Yang, Xiaoxia Fan. The efficacy of aspirin combined with dexamethasone in the treatment of habitual abortion patients and its impact on coagulation and immune function [J]. Chinese and Foreign Women's Health Research, 2022 (5): 43-44, 94
[17] Bae J, Jung Y, Lee J, et al. EP20.05: Future risk of metabolic syndrome after recurrent spontaneous abortion: a cohort study using UK Biobank [J]. Ultrasound in Obstetrics & Gynecology, 2023, 62.
[18] Yanping Lei, Caijuan Li. The efficacy of aspirin combined with dexamethasone in the treatment of habitual abortion patients and its impact on coagulation and immune function [J]. Thrombosis and Hemostasis, 2021, 27 (5): 825-827