

Efficacy of Low Molecular Weight Heparin Versus Low-Dose Aspirin in the Treatment of Recurrent Miscarriage in Prethrombotic States

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Abstract: **Objective:** To explore the application effect of low-molecular-weight heparin and low-dose aspirin in the treatment of recurrent abortion with pre thrombotic state. **Method:** 80 patients with recurrent miscarriage and prethrombotic state admitted to our hospital from February 2022 to February 2023 were selected as the study subjects. They were randomly divided into a control group and an observation group of 40 cases each. The control group received low-molecular-weight heparin treatment, while the observation group received a combination of low-molecular-weight heparin and low-dose aspirin for treatment. Compare the outcomes of two groups after completing different treatments. **Results:** By observing the thrombin time, D-dimer index and pregnancy outcome of the two groups, the thrombin time and pregnancy outcome of the observation group were significantly higher than those of the control group, while the D-dimer index of the observation group was significantly lower than that of the control group, with statistically significant differences ($P<0.05$). **Conclusion:** The application of low-molecular-weight heparin and low-dose aspirin in the treatment of prethrombotic state of recurrent abortion can effectively improve the outcome of pregnancy, reduce the D-dimer index of patients, and optimize the thrombin time of patients. It has high clinical application value and is worth promoting.

Keywords: Low Molecular Weight Heparin; Aspirin; Recurrent Miscarriage; Prethrombotic State

Introduction

Recurrent spontaneous abortion refers to the loss of a fetus before 28 weeks of gestation, most of which is an early miscarriage, the main symptoms of which are postmenopausal accompanied by vaginal bleeding and abdominal pain. According to relevant studies, the incidence of spontaneous abortion in clinical practice is 15% to 25%, accompanied by the probability of complications, and in severe cases, it can lead to shock or septic shock due to excessive blood loss. This not only causes great harm to the patient's psychology after the loss of the fetus, but also brings a heavy burden to the patient's body and life ^[1]. In Aoshuang Xue ^[2] and other studies, the main pathogenesis factors in addition to infection, genetics, immunity, but also related to the prethrombotic state, which will lead to placental infarction caused by blood loss of the placenta, so that the embryo or fetus due to hypoxia, ischemia, dysplasia and eventually death, but in the medical community, no obvious clinical symptoms of this state have been found. Therefore, for this condition, it is important to use corresponding treatment for functional imbalances such as coagulation in the prethrombotic state, which can not only help improve pregnancy outcomes, but also effectively help patients improve treatment outcomes and optimize coagulation function ^[3]. In this study, the effects of low molecular weight heparin and low-dose aspirin in the treatment of recurrent miscarriage prethrombotic state were analyzed, as follows.

1. Information and methodology

1.1 General information

80 patients with recurrent miscarriage prethrombotic state admitted to our hospital from February 2022 to February

2023 were selected as research objects, and they were divided into control group and observation group according to random number method, with 40 cases in each group, of which the age of the control group patients was 23~43 years old, and the average age was (28.24±4.15) years; The number of miscarriages was 3~6, and the average number of miscarriages was (3.95±0.24); The age of patients in the observation group was 21~42 years old, and the average age was (29.14±0.85) years; The number of abortions was 2~7, and the average number of abortions was (3.24±0.42). After analysis of the general data of the two groups, the difference was not statistically significant ($P>0.05$) and comparable. All patients are informed and consented, and our ethics committee is informed and consents to the study.

1.2 Methods

All patients with recurrent miscarriage with prethrombotic states were examined after admission, and the two groups of patients were treated in different ways. The specific implementation method is as follows:

(1) Control group: The control group was treated with low molecular weight heparin calcium injection (Hainan General Alliance Pharmaceutical Co., Ltd., Sinopharm Quasi-word H20010300), and low molecular weight heparin calcium injection 5000IU subcutaneous injection was required, and 1ml of water for injection was added once / d.

(2) Observation group: the observation group used low molecular weight heparin combined with low-dose aspirin (Guangdong Jiuming Pharmaceutical Co., Ltd., Sinopharm H44021139) for treatment, and also gave subcutaneous injection of 5000IU of low molecular weight heparin calcium injection, and 1ml of water for injection was added when used, 1 time / d; At the same time, combined with low-dose aspirin for oral administration, 75mg / time, 1 time / d.

(3) Treatment guidance: All patients need to regularly check the physical indicators after medication, and record the patient's reactions such as adverse reactions or complications in time, if the patient does not have any adverse reactions and complications, continue to use the drug until 1 week before delivery.

1.3 Efficacy criteria

In this study, the clinical efficacy of the two groups of patients was observed and the thrombin time, D-dimer index, and pregnancy outcome after different treatments were evaluated.

(1) Thrombin time and D-dimer indexes are recorded according to the data obtained by the two groups of patients after different treatment methods.

(2) Maternal delivery outcomes were evaluated by observing the number of successful delivery cases, the number of failed birth cases, and the success rate of delivery.

1.4 Statistical methods

All data of this study were included in the SPSS23.0 software for comparative analysis, and the tests of counting data and measurement data were performed with χ^2 and t , respectively, expressed as percentage (%) and (mean±standard deviation), respectively, if the difference in ($P<0.05$) was statistically significant.

2. Results

2.1 Comparison of thrombin time in the two groups

After different treatment modalities were implemented in the two groups, according to the thrombin time of the observation group compared with the thrombin time of the control group, the thrombin time of the observation group was significantly better than that of the control group, and the difference was significant ($P<0.05$), see Table 1:

Table 1 Comparison of thrombin time between the two groups ($\bar{x} \pm s$)

Groups	Number of examples	Thrombin time/min
Observation group	40	17.68±1.24
Control group	40	16.26±0.73

<i>t</i>	-	6.241
<i>P</i>	-	0.001

2.2 Comparison of D-dimer indexes in the two groups

According to the different treatment methods of the two groups, according to the D-dimer index of the observation group compared with the D-dimer index of the control group, the D-dimer index of the observation group was $(115.36 \pm 21.34) \mu\text{g/L}$, and the D-dimer index of the control group was $(136.42 \pm 27.95) \mu\text{g/L}$, $t=3.788$, $P=0.001$, the D-dimer index of the observation group was significantly better than that of the control group, and the difference was significant ($P<0.05$).

2.3 Comparison of pregnancy outcomes between the two groups

According to the records of pregnancy outcomes after different treatment modalities in the two groups, 36 cases of successful delivery and 4 cases of failed delivery in the observation group, with a success rate of 90%; The control group had 26 successful delivery and 14 failed delivery, and the success rate of delivery was 65%, $\chi^2=7.169$, $P=0.007$, and the pregnancy outcome in the observation group was significantly better than that in the control group, and the difference was significant ($P<0.05$).

3. Discussion

When a pregnant woman has two or more consecutive spontaneous abortions is medically called recurrent spontaneous abortion, according to relevant medical studies, recurrent abortion patients account for 5% of women during childbearing period, of which three or more patients account for 1%, and the probability of embryo loss or death due to recurrent miscarriage accounts for 40%, such cases seriously affect the life of patients. It also brings an inevitable psychological burden to patients and their families, so it attracts the attention of the medical community. Relevant studies have shown that the etiology of recurrent miscarriage is very complex, and the factors that can trigger its condition include prethrombotic states, which mostly appear between 12 and 28 weeks of gestation, and are likely to be accompanied by infection or complications. Prethrombotic state, which occurs with symptoms such as blood stasis, increased or rising content of coagulation factors, leading to blood clots formation, mainly manifested in hemostasis, coagulation and imbalance between anticoagulant systems, severe cases will cause cerebral thrombosis, myocardial infarction and other diseases, and will cause life danger to patients [4]. Therefore, medical personnel have found that the use of seven tests such as coagulation as examination indicators for patients, and then the indicators of molecular markers as evaluation are the main ways to treat the disease, of which low molecular weight heparin can promote the balance between hemostasis, coagulation and anticoagulation system function [5].

Patients with recurrent miscarriage with prethrombotic states are usually opted for medication, and low molecular weight heparin (LMWH) is an anticoagulant that suppresses the risk of thrombosis by suppressing clotting. Studies have shown that low molecular weight heparin does not increase the risk of maternal and neonatal bleeding, nor has it been found to have other adverse effects on pregnancy outcomes, and is a relatively safe drug for patients and their fetuses [6], and its presence reduces the risk of use in patients compared with natural heparin and unfractionated heparin. Aspirin can also be used to treat prethrombotic states, which can prevent cerebral thrombosis, myocardial infarction and other diseases like low molecular weight heparin by inhibiting the cyclooxygenase aggregation of platelets, and are also safe drugs [7]. However, excessive aspirin dosage will cause adverse reactions to the patient's body, such as liver damage, gastric damage and allergic phenomena, etc., and in severe cases, it will also cause the patient's condition to worsen, so the use of low molecular weight heparin or aspirin drugs alone can not achieve the best efficacy, clinically advocating the use of low molecular weight heparin combined with low-dose aspirin for treatment, can achieve the best therapeutic effect, the two can synergize, so as to achieve the effect of inhibiting the prethrombotic state [8]. For the combination of the two drugs, combined with the results between the control group and the experimental group obtained in this study, by observing the different pregnancy outcomes of the two groups, it can be concluded that low molecular weight heparin combined with low-dose aspirin can effectively

help patients improve pregnancy outcomes, increase the birth rate of fetuses, reduce their mortality, and reduce the occurrence of complications. Secondly, from the perspective of the patient's thrombin time, the thrombin time of the observation group was significantly higher than that of the control group, and the treatment effect of the observation group was better and more effective than the treatment effect of the control group, which could also improve the patient's condition. Finally, by observing the D-dimer indexes of the two groups, the efficacy of two different treatment methods can be judged according to the D-dimer index, among which the indicators of the observation group are better than the control group, and the joint cooperation of the two pharmacological effects not only reduces the incidence of adverse reactions and complications, but also effectively improves the prethrombotic state, and achieves the effect of inhibition and balance.

In summary, the application of low molecular weight heparin and low-dose aspirin in the treatment of recurrent abortion prethrombotic state has a significant effect, which can reduce the risk of pregnancy in patients, reduce the incidence of complications in patients, improve pregnancy outcomes and treatment effects, effectively balance and inhibit prethrombotic states, have important clinical application value, and have high safety, which is worthy of promotion.

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