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A Study on the Value of Nifedipine Tablets Combined with Vitamin E Calcium in the Treatment of Hypertension during Pregnancy

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Abstract: *To investigate the effect of nifedipine + vitamin E calcium in the treatment of hypertension during pregnancy. A total of 80 patients with hypertension in pregnancy treated in our hospital from October 2020 to October 2021 were randomly selected and divided into 2 groups, control group and observation group, with 40 cases in each group. Conventional treatment in the control group; The observation group was then treated with nifedipine + vitamin E calcium. The efficacy of the two groups was compared. After treatment, the blood pressure and 24h urine protein indexes of the two groups were compared, and the postoperative efficacy of the observation group was higher than that of the control group, and the data were statistically significant (P<0.05). Compared with the pregnancy outcome and coagulation fibrinolytic function indexes of the two groups, the observation group had lower preterm birth, intrauterine distress and cesarean section than the control group (P<0.05), and the TT and PT coagulation indexes in the observation group were higher than those in the control group, while FDP and FIB were lower than those in the control group, and the data were different (P<0.05). Nifedipine + vitamin E calcium combination therapy in hypertensive patients during pregnancy has an ideal curative effect, which can not only relieve symptoms, regulate coagulation function, but also help improve blood pressure and ensure the safety of mother and baby, which can be promoted in clinical practice as an effective treatment measure.*

Keywords: *Nifedipine; Gestation period; Hypertension; Vitamin E calcium*

1. Introduction

According to relevant data, gestational hypertension accounts for about 5~10% of pregnancy data, and the mortality induced by this disease accounts for about 10~16% in pregnancy death data, often accompanied by edema, hypertension and other symptoms, posing a serious threat to maternal and infant safety [1]. At present, the disease mostly adopts conventional treatment such as diet and blood pressure reduction, and the efficacy is not good, and the safety of mother and baby cannot be effectively guaranteed. In the clinically relevant literature, it has been shown that the pathogenesis of the disease is closely related to genetics, nutrition, vascular endothelial injury, and immune dysfunction, because the patient's blood is hypercoagulable, causing microthrombi, resulting in hyperfibrinolysis [2]. Therefore, in the treatment of this disease, the regulation of coagulation fibrinolytic function plays an important role in improving disease control. Nifedipine is a calcium antagonist that helps dilate blood vessels, improve symptoms, stabilize the condition, and is relatively satisfactory in the treatment of hypertensive diseases [3]. Because the patient has symptoms such as abnormal calcium metabolism and lipid metabolism disorders after the onset, the condition can be stabilized to a certain extent through calcium and vitamin supplementation. Relevant literature reports that for patients with hypertension during pregnancy, the combination of nifedipine and vitamin E calcium on the basis of conventional treatment such as diet and lowering blood pressure can not only reduce blood pressure, but also improve pregnancy outcomes and reduce mortality [4]. Therefore, this study will analyze and discuss the efficacy of patients through conventional treatment and nifedipine + vitamin E calcium combination therapy, which is reported as follows.

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2. Information and methods

2.1. General information

80 patients with hypertension during pregnancy who were treated in our hospital from October 2020 to October 2021 were randomly selected and divided into 2 groups, control group and observation group, with 40 cases in each group. There was no significant comparison of the baseline data between the two groups (p>0.05), see Table 1.

Inclusion Criteria: (1) Met the diagnostic criteria; (2) Patients and family members are aware of the situation and participate voluntarily; (3) No previous history of high pressure; Exclusion criteria: (1) allergy to the drug; (2) accompanied by chronic liver disease; (3) After B-ultrasound examination, the fetus is abnormal.

Table 1: Comparison of two sets of basic data ($\bar{x} \pm s$)

Groups	Number of cases(n)	Age (years)	Gestational weeks (week g)	Pregnancy cycle (times)
Observation group	40	25.88±2.27	23.01±1.28	1.26±0.31
Control group	40	26.01±2.88	22.69±1.37	1.31±0.36
t		0.224	1.079	0.666
p		0.823	0.284	0.508

2.2. Method

The control group was treated with conventional sedation and oxygen, closely observed the condition of the mother and fetus, and took antihypertensive and sedative treatment according to the patient's condition: blood pressure control drug labetalol tablets (Dalian Merro Pharmaceutical, Sinopharm H21023710, 3 times a day, oral, 1 dose controlled at 50-150mg, if the patient's blood pressure is still high, labetalol injection (Shanghai First Biochemical Pharmaceutical Co., Ltd., Sinopharm H31022472) intravenous treatment, the first 20g, The daily injection amount is controlled within 220mg, the single dose is controlled within 80mg, and the blood pressure is controlled at SBP: 130~155mmHg after intravenous injection treatment; DBP: 80~105mmHg, injection treatment is prohibited, replaced by oral. The observation group was given nifedipine + vitamin E calcium combination therapy, nifedipine was taken orally, once a day, once a dose control and then 30mg, the manufacturer of the drug was Sinopharm Guangdong Global Pharmaceutical Co., Ltd., and the standard word of Sinopharm was H44024160; Vitamin E softgels, once a day, 1 dose controlled at 100mg, the manufacturer is Hainan Haishen Tongzhou Pharmaceutical Co., Ltd., Sinopharm H20063681; Vitamin D calcium chewable tablets, 1 time a day, 1 dose controlled in 2 tablets, manufacturer: A&Z Pharmaceutical, Inc., approval number BH20020069. All patients were treated for 1 month.

Observation indicators

(1) Blood pressure (diastolic blood pressure DBP, systolic blood pressure SBP) and 24h urine protein were compared between the two groups.

(2) Compare the coagulation fibrinolytic function indexes PT, TT, FIB and fdp between the two groups. PT: thrombin time, TT: thrombin time, FIB: fibrinogen, FDP: fibrin degradation products.

(3) Symptoms include epigastric discomfort, chest tightness, and dizziness.

(4) The efficacy of the two groups was compared, which was divided into obvious, effective and ineffective. Effective: normal control of blood pressure, no proteinuria; Effective, proteinuria decreased by 0.5g and SBP and DBP decreased by 10-20mmHg; Ineffective: no change in symptoms.

(5) Comparison of pregnancy between the two groups, including preterm birth, intrauterine distress and cesarean section.

ISSN 2618-1584 Vol. 5, Issue 8: 59-64, DOI: 10.25236/FMSR.2023.050808

2.3. Statistical methods

The data were analyzed by SPSS21.0, measured line t test, counting data line chi-square test, and test standard $p<0.05$.

3. Results

3.1. Comparison of blood pressure and 24h urine protein in the two groups

The blood pressure and 24h urine protein indexes in the experimental group were lower than those in the control group, and there was a significant significance between the data ($p<0.05$), as shown in Table 2.

Table 2: Comparison of blood pressure and 24h urine protein in two groups ($\bar{x} \pm s$)

Groups	Number of cases(n)	Diastolic blood pressure(mmHg)	Systolic blood pressure(mmHg)	24h urine protein(g/24h)
Observation group	40	83.11±4.98	131.88±7.01	0.18±0.03
Control group	40	89.27±5.29	149.02±6.58	0.26±0.04
t		5.362	11.275	10.119
p		0.000	0.000	0.000

3.2. Comparison of coagulation function indexes between the two groups

The TT and PT coagulation indexes in the observation group were higher than those in the control group, while FDP and FIB were lower than those in the control group, and the data differed greatly ($P<0.05$), as shown in Table 3.

Table 3: Comparison of coagulation function indexes between two groups ($\bar{x} \pm s$)

Groups	Number of cases(n)	PT(s)	TT(S)	FIB(g/L)	FDP(ug/L)
Observation group	40	12.81±1.79	15.67±1.58	3.07±0.52	3.79±0.51
Control group	40	11.87±1.72	12.81±1.27	3.98±0.81	8.07±0.69
t		2.395	8.923	5.979	31.548
p		0.019	0.000	0.000	0.000

3.3. Comparison of symptom improvement between the two groups

Comparing the symptoms of the two groups, the observation group improved better than the control group, and the data were statistically significant ($p<0.05$), see Table 4.

Table 4: Comparison of symptom improvement rates between the two groups [n(%)]

Groups	Number of cases(n)	Chest tightness	Epigastric discomfort	Dizziness
Observation group	40	1(2.5%)	2(5%)	2(5%)
Control group	40	5(12.5%)	6(15%)	7(17.5%)
x2		7.207	5.556	7.825
p		0.007	0.018	0.005

3.4. Comparison of efficacy between the two groups

Compared with the efficacy of the two groups, 92.5% of the efficacy of the observation group was higher than that of the control group of 63.5%, and the data were statistically significant ($p<0.05$), as shown in Table 5.

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Table 5: Comparison of efficacy between the two groups [n(%)]

Groups	Number of cases(n)	Significantly effective	Effective	ineffective	Efficacy rate
Observation group	40	22(55%)	15(37.5%)	3(7.5%)	37(92.5%)
Control group	40	14(35%)	11(27.5%)	15(37.5%)	25(63.5%)
x2		8.081	2.279	25.807	25.807
p		0.004	0.131	0.000	0.000

3.5. Comparison of pregnancy outcomes between the two groups

Comparing the pregnancy outcomes between the two groups, the data in the observation group were superior to those in the control group, and the data were statistically significant ($p<0.05$), as shown in Table 6.

Table 6: Comparison of pregnancy outcomes between the two groups [n (%)]

Groups	Number of cases(n)	Premature birth	Fetal distress	Cesarean section
Observation group	40	2(5%)	2(5%)	5(12.5%)
Control group	40	7(17.5%)	8(20%)	16(40%)
x2		7.825	10.286	19.532
p		0.005	0.001	0.000

4. Discussion

In recent years, the clinical pregnancy rate has increased year by year, resulting in a significant increase in cases of hypertension during pregnancy. Hypertension during pregnancy is more common, the etiology is relatively complex, due to obesity, mood, genetics, immune dysfunction and other factors before conception, can also lead to disease induce, if not timely control and treatment, will seriously endanger the safety of women and infants [4]. Due to the particularity of the disease, in conventional treatment, rest, emotional stability, diet regulation and blood pressure control treatment are more adopted, and according to the different symptoms and disease characteristics of the patient, sedatives and hypoproteinemia can be given to improve treatment, which has a certain effect on the state of mother and baby, but the overall efficacy is relatively poor [5]. According to relevant clinical studies, patients with hypertension during pregnancy have abnormal coagulation fibrinolytic function, which is more likely to cause blood clots than healthy pregnant women. Among them, the detection of thrombin time (PT), thrombin time (TT), and fibrinogen (FIB) has an auxiliary role in the detection of abnormal coagulation function in the body, and the detection of thrombin time reflects exogenous coagulation status, fibrinogen reflects the content of this substance, and thrombin time reflects the conversion time between fibrinogen and fibrin [6]. Because after the patient's illness, plasma coagulation factors in the body are activated, resulting in shortened thrombin and thrombin detection time, elevated fibrinogen, and ultimately prothrombotic state.

Nifedipine is a calcium antagonist drug, which has the characteristics of strong efficacy and fast effect, which helps to expand arteries and improve blood pressure, and is widely used in clinical practice with ideal efficacy [7]. Due to the high selectivity of the drug, it can effectively block the extracellular entry and exit of Ca2+ and reduce the concentration of Ca2+ in the cell. For cardiomyocytes, nifedipine reduces Ca2+ cell internal and external entry, reduces Ca2+ concentration, and has inhibitory effect on myocardial contractility; For peripheral blood vessels, dilating blood vessels can reduce peripheral vascular resistance and reduce systolic and diastolic blood pressure [8-9]. In addition, in hypertensive disease inducing, abnormal lipid metabolism also has some damage to vascular conditions [10-11]. Therefore, vitamin E calcium combination therapy in the treatment of diseases has a better effect. Vitamin E is an antioxidant drug that regulates the body's metabolic activity; It can inhibit the development of carcinogens in the body, stimulate the immune system in the body, reduce deformant cells, and reverse malignant tumor cells; Adjustable blood pressure; It can act on peripheral vascular function and structure [12-13]. At the same time, abnormal calcium metabolism can also lead to hypertension during pregnancy. Therefore, in this study, nifedipine + vitamin E calcium was combined for treatment. The results of the study showed that the control group was given

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conventional treatment, and the observation group was given nifedipine + vitamin E calcium combination therapy, after treatment, the systolic blood pressure, diastolic blood pressure, and 24h urine protein in the observation group were lower than those in the control group, and the symptoms such as chest tightness and dizziness were also lower than those in the control group, and the indicators of PT, TT, FIB, FDP were improved. Fan Chuanwu. Efficacy of magnesium sulfate combined with nifedipine in the treatment of hypertensive disorders during pregnancy and its effect on pregnancy outcomes. Wang Yanhua showed in the effect of nifedipine tablets combined with vitamin E and calcium on pregnancy outcome and coagulation fibrinolytic function in patients with hypertensive diseases during pregnancy, and the fetal and premature birth rates were lower by nifedipine + vitamin E calcium treatment, and the coagulation fingers were significantly improved, which was more conducive to improving coagulation fibrinolytic function, controlling blood pressure, and playing a key role in the life safety of mothers and infants. Chen Liming, Hu Long, in the research report on the effect of nifedipine tablets combined with vitamin E calcium in the treatment of hypertensive diseases during pregnancy and its impact on pregnancy outcomes, the observation group was given nifedipine + vitamin E calcium combined therapy, and the control group was treated with conventional treatment, and the coagulation indexes of the observation group were also improved, and the symptoms of chest tightness, epigastric discomfort, premature birth and cesarean section of the infant were also reduced. It can be known that nifedipine inhibits uterine smooth muscle contraction, dilates blood vessels, improves blood viscosity and coagulation indicators, so that the blood function in the body is normal. Vitamin E helps relieve oxidative stress, reduce the number of lipid metabolites in the blood vessel wall, and control hypercoagulability. At the same time, adjuvant therapy with vitamin D calcium chewable tablets can also accelerate calcium metabolism and alleviate the disease. In this study, the pregnancy outcomes such as preterm birth, intrauterine distress, and cesarean section in the observation group were also significantly better than those in the control group, and the data were different ($p<0.05$).

In summary, nifedipine + vitamin E calcium combination therapy for patients with hypertension during pregnancy has satisfactory efficacy and high safety, which can not only reduce blood pressure, improve coagulation indicators, but also relieve symptoms and improve pregnancy outcomes, and can be promoted as an effective drug treatment.

Acknowledgements

Introduction to corresponding author: Xiaoshan Zhang (1978.07-); Education: Bachelor's degree; Title: Associate Chief Physician; Research direction: Hypertension and critical obstetric illness during pregnancy.

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