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Original Article

Clinical nursing experience and the analysis of pregnant patients with severe hypertensive syndrome

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Abstract: Objective: To explore the clinical significance of the comprehensive nursing model for pregnant patients with severe hypertensive syndrome and to emphatically analyze the nursing measures for patients with fundus syndrome. Methods: Patients with severe pregnancy-induced hypertension were selected as the observation subjects for this prospective study. They were randomly divided into an observation group and a control group, and each group included 60 patients. The observation group was given the comprehensive nursing mode, while the control group was given routine nursing guidance. Then we compared the proportion of patients with pregnancy-induced hypertension complicated with retinopathy, the differences in the degree of fundus lesions, the adverse reactions during pregnancy, the prognoses, and the nursing satisfaction in the context of postpartum fundus lesions in the patients with pregnancy-induced hypertension complicated with retinopathy. Results: We found that there were 52 patients in the observation group and 57 patients in the control group with retinopathy, respectively, and the difference was not significant (P>0.05). There were 8 patients with stage I retinopathy, 28 patients with stage II retinopathy and 21 patients with stage III retinopathy in the control group, 13 patients with stage I retinopathy, 34 patients with stage II retinopathy and 5 patients with stage III retinopathy in the observation group, and the differences were statistically significant (P<0.05). Compared with the observation group, the incidence of adverse reactions during pregnancy was significantly higher in the control group (P<0.05). During the postpartum follow-up, all the patients with pregnancy-induced hypertension complicated with retinopathy in the observation group had their retinas restored to their pre-pregnancy state within 2 months. In the control group, there were 6 patients who had old fluid exudation and decreased vision, and the difference between the two groups was significant (P<0.05). The blood pressure recovery of the patients in the observation group was also significantly better than it was in the control group (P<0.01). The nursing satisfaction of the observation group was 96.67%, which was significantly higher than it was in the control group (81.67%), and the difference was statistically significant (P<0.05). Conclusions: The comprehensive nursing mode has an important clinical value for pregnant women with pregnancy-induced hypertension, and it can alleviate the degree of disease in patients with pregnancy-induced hypertension and fundus lesions and can improve patients' prognosis and the patients' satisfaction.

Keywords: Severe pregnancy-induced hypertension, retinopathy, comprehensive nursing mode, clinical experience

Introduction

Pregnancy-induced hypertension syndrome is referred to as pregnancy-induced hypertension, and it is mostly a pregnancy-specific immunological disease that occurs when the number of gestational stage of pregnant women reaches 20 weeks or more. Some patients have mild symptoms such as headache, vomiting, blurred vision, and decreased visual acuity. Some patients have severe symptoms, such as hypertension, increased proteinuria, ocular arteriospasm, and systemic edema. In more serious cases, convulsions, coma, and even death may occur [1, 2]. Pregnancy-induced hypertension is one of the most serious obstetric complications and is also one of the main causes of maternal and perinatal morbidity and death. It accounts for about 1/4 of the total number of mother-child deaths during pregnancy [3], and seriously affects the death rates of mothers and children.

The incidence of pregnancy-induced hypertension in pregnant women is as high as 10%. Among them, the incidence of fundus lesions in the patients with severe pregnancy-induced hypertension is higher, accounting for more

than 70%. Patients often show an abnormal impairment of their visual function, resulting in blurred vision, or even retinal detachment leading to blindness [4]. At present, the pregnancy-induced hypertension syndrome is mainly treated by antihypertensive drugs to relieve the clinical symptoms. However, the treatment effect of the various complications is not ideal, so knowing how to treat patients with pregnancy-induced hypertension complicated with retinopathy more safely and effectively during treatment is critical. The prevention and treatment of patients with pregnancy-induced hypertension and retinopathy is an urgent problem to be solved in obstetrics, which is of great clinical significance [5-7].

Current studies suggest that, when actively treating pregnant women with severe preeclampsia complicated with retinopathy, standardized, systematic and scientific nursing measures play an active role in the control of the disease, the progress of pregnancy, and the recovery of vision [8]. Traditional nursing measures are mainly aimed at the indicators of the patients' physical signs. They ignore the perioperative information and education, the intraoperative intervention, and the instructions and guidance after discharge, resulting in limited nursing efficiency. The comprehensive nursing mode scientifically conducts psychological intervention, dietary guidance, vital signs monitoring, and post-discharge guidance and follow-up, by comprehensively combining the clinical symptoms and characteristics of the patients. It can promote the patients' health and reduce their complications, improve the doctor-patient relationship, and enhance the curative effect. The comprehensive nursing mode has been adopted by many departments, such as general medicine, chest and orthopedics, and is gaining in recognition [9].

This study mainly discussed the clinical significance of the comprehensive nursing mode for pregnant patients with severe hypertensive syndrome complicated with retinopathy and analyzed the nursing experience under this mode, hoping to promote a standardized construction of the nursing model.

Materials and methods

Patients

Pregnant women with severe pregnancy-induced hypertension who were admitted to The Central Hospital of Wuhan and those received a regular physical examination from June 2015 to August 2019 were selected as the study cohort and were randomly divided into a control group and an observation group, with 60 cases in each group. The control group was given routine nursing guidance, while the observation group was subjected to the comprehensive nursing mode based on the control group, including prenatal health education, prenatal examinations, pre-admission nursing, admission nursing, psychological nursing, eye monitoring, medication guidance, postpartum nursing, and discharge guidance. The study was approved by the ethics committee of the hospital, and the patients were informed and signed the informed consent forms.

Inclusion and exclusion criteria

The inclusion criteria were formulated with reference to the guidelines for the classification, diagnosis, and management of hypertensive diseases during pregnancy published by the international society for research on gestational hypertension (ISSHP) [10]. And the inclusion criteria were as follows: age from 20 to 45 years old, gestational age ≥20 weeks; blood pressure increased to more than 160/110 mmhg, urine protein ≥2.0 g/L; systemic edema, and weight gain more than 0.5 kg per week; accompanied by symptoms such as persistent headache, chest tightness, and dizziness.

Exclusion criteria: family or previous history of hypertension; a history of mental disorders or mental illness; unable to communicate normally; accompanied by heart, liver, kidney, or other serious vital organ diseases; suffering from eye disease or other systemic diseases.

Methods

The control group had routine nursing guidance, including regular prenatal examinations, the establishment of maternal records, disease knowledge, diet and routine guidance. The observation group was given the comprehensive nursing mode, which including the following: 1. Pre-natally instructing the patients about the significance of regularly taking their blood pressure, fundus and vision, communicating with patients in a timely manner, controlling the patients' emotions, learning about disease prevention and making preparations for the early detection, treatment, and control of diseases, and trying to minimize the incidence of compli-

Table 1. Comparison of the general clinical data between the control and observation group

Group	Control group	Observation group	t/χ^2	P
Number	60	60		
Average age (years)	25.9±5.8	26.3±6.1	0.368	0.714
Maternal type			0.391	0.532
Primipara	46	43		
Multipara	14	17		
Proteinuria (g/L)	2.48±0.28	2.51±0.35	0.518	0.605
edema (kg/week)	0.71±0.09	0.69±0.12	1.033	0.304
BP (mmHg)	(165.5±4.5)/(114.2±4.0)	(166.4±4.8)/(115.1±3.4)	1.060/1.328	0.292/0.187

cations of pregnancy-induced hypertension [11]. 2. Guide the puerpera to eat reasonably in the early stages of pregnancy, pay attention to the need for high protein foods and foods containing trace elements, appropriately reduce the intake of sodium, and eat light, digestible, high-calcium and vitamin-rich food after delivery [12]. 3. Arrange the puerpera to stay in a quiet, clean and comfortable single room to ensure that the patients stay in a good mood and a comfortable sleep environment. and that the room is equipped with relevant antihypertensive drugs and first-aid supplies, and actively ask patients whether there is any sign of illness to better prevent it. 4. After admission, the patients had their blood pressure taken, and their heart rate, the fetal heart and, their fundus and so on were also examined in time. The corresponding grading nursing program was developed according to the severity of the patients at all levels. The nursing staff paid attention to the observation of the patients' urine volume, respiration and knee jerk reflex, etc. Before delivery, the patients were pretreated with antihypertensive therapy and spasmolysis, and some patients were treated with ocular injections. And we should pay attention to doctor-patient communication and improve patient compliance. 5. The patients were advised to avoid excessive happiness and sadness and other risk behaviors that may cause increased intraocular pressure, to avoid bumping and shaking after discharge, to keep their heads stable, to avoid squeezing their eyes, to reduce the possibility of sneezing, and to sleep in a supine position. Blood pressure and fundus were monitored weekly and regular follow-up was conducted within half a year.

Observation index and curative effect evaluation

Direct ophthalmoscopy examinations were used to detect the patients' fundus statuses and to detect the degree of fundus lesions and the corresponding number of patients in the different periods. The patients are divided into three levels according to the condition of fundus: I grade, patients with retinal artery vasospasm; II grade, patients with arteriosclerosis in the wall of the retinal artery; III grade, Patients with retinal hemorrhage, edema or detachment, and so on [13]. Then we observed the adverse reactions (dizziness, chest tightness, nausea, anxiety, etc.) and the blood pressure changes. The self-made satisfaction questionnaire was used to investigate the nursing satisfaction. A score of >8 was rated satisfactory, 6-8 was rated basically satisfactory, a score of <6 was rated unsatisfactory. And the formula for the satisfaction degree is as follows: satisfaction degree = (satisfaction number + basic satisfaction number)/total number×100%.

Statistical analysis

All the data were analyzed using the statistical software SPSS 14.0. The count data was expressed as a percentage (%) and analyzed using chi-squared tests. The quantitative data were expressed as ($\bar{x} \pm s$), and when the data conformed to a normal distribution the comparisons between groups were conducted using independent t-tests. $P<0.05$ was considered statistically significant.

Results

Comparison of general clinical data

There were no significant differences in the general clinical data including age, gestational status, blood pressure level, proteinuria level, or edema status between the two groups, indicating that the design and enrollment of the study met the basic needs of the clinical analysis ($P>0.05$, **Table 1**).

Table 2. Comparisons of the number of patients with retinopathy and the severity of the retinopathy in the two groups

Group	Number	Number of retinal detachment	Number of patients complicated with retinopathy	Grade of illness		
				I	II	III
Control group	60	7	57	8	28	21
Observation group	60	1	52	13	34	5
χ^2/Z value		4.821	2.502		-3.058	
P		0.028	0.114		0.002	

Table 3. Comparisons of the fundus diseases in the postpartum follow-up between the two groups

Group	Number of patients complicated with retinopathy Visual impairment	The first month after delivery		The second month after delivery	
		Visual impairment	Fundus discomfort	Visual impairment	Fundus discomfort
Control group	57	7	6	6	6
Observation group	52	3	2	0*	0*
χ^2		1.384	1.784	5.739	5.739
P		0.239	0.182	0.016	0.016

Note: compared with the first month after delivery, *P<0.05.

Comparison of the number and the degree of the progression of preeclampsia complicated with retinopathy

The difference in the number of patients with severe pregnancy-induced hypertension complicated with retinopathy in the control and observation groups after being given different nursing guidance was not statistically significant (P>0.05). The degree of retinopathy was different between the two groups, and the difference was statistically significant (P<0.05). The number of patients with retinal detachment in the observation group was also significantly lower than it was in the control group (P<0.05), suggesting that the degree of lesions in the observation group was significantly better than it was in the control group. So the comprehensive nursing mode is of great significance for the prevention of pregnancy and the control of complications of fundus during pregnancy-induced hypertension (see **Table 2**).

Comparison of the ocular prognoses

The results showed that the patients' eyes after delivery in the control and observation groups recovered gradually. There were 7 cases of visual impairment and 6 cases of fundus discomfort in the control group, and 3 cases of visual impairment and 2 cases of fundus discomfort in the observation group at the first month after delivery. The results showed that all the patients in the observation group had their vision restored to the prenatal level without any other adverse reactions at the second month after delivery. In the control group, there were 6 cases of stale fluid exudation and decreased vision, and the difference was statistically significant (P<0.05), as seen in **Table 3**. The recovery state of the fundus of the patients in the observation group at the first month after delivery was better than that at the second month after delivery, and the differences were significant (P<0.05), and there was no difference in the control group (P>0.05).

Comparisons of the adverse reactions in the patients complicated with retinopathy

After analyzing the adverse reactions of the patients with pregnancy-induced hypertension complicated with retinopathy, we found that there were 22 cases of dizziness, 32 cases of chest distress, 14 cases of nausea and 21 cases of anxiety in the control group. And the number of adverse reactions in the control group was significantly higher than it was in the observation group, and the difference was statistically significant (P<0.05), as shown in **Table 4**.

As can be observed in **Figure 1**, the incidence of adverse reactions (dizziness, nausea, anxi-

Table 4. Comparison of the adverse reactions in the two groups

Group	Number of cases	Dizziness	Chest distress	Nausea	Anxiety
Control group	57	22	32	14	21
Observation group	52	11	19	5	10
χ^2	-	8.229	9.894	5.613	6.629
P	-	0.048	0.041	0.040	0.042

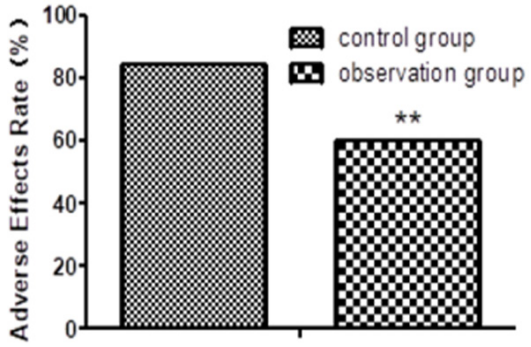

Figure 1. Comparisons of adverse reactions between two groups, **P<0.05.

ety) in the control group was 84.21%, while that in the observation group was 59.62%, and the difference was statistically significant (P<0.05).

Comparisons of the changes in postpartum blood pressure

It can be seen from **Table 5** that the patients' blood pressure in both groups gradually decreased at the first and second month after delivery, and the patients' blood pressure at the second month after delivery was closer to normal than it was at the first month (P<0.01).

Comparisons of the nursing satisfaction

It can be seen from **Table 6** that the patients with severe pregnancy-induced hypertension receiving the comprehensive nursing intervention mode had a satisfaction rate of 96.67%, which was significantly higher than the rate of the control group (81.67%), and the difference was statistically significant (P<0.05).

It can be seen from the **Figure 2** that the nursing satisfaction of the patients in the control group was 81.67%, and the rate in the observation group was 96.67%. And the difference was statistically significant (P<0.05), suggesting that the comprehensive nursing model had a better clinical response and a higher recognition in patients with severe pregnancy-induced hypertension.

Discussion

Clinical studies have found that effective nursing measures are of great significance for the treatment of severe pregnancy hypertension syndrome, which can reduce the incidence of complications and adverse reactions, affect the development of complicated fundus lesions, and improve postpartum recovery effect, etc. [14-16]. Li found that when the comprehensive nursing mode was adopted to restore neurological function in patients with acute cerebral infarction, the patients showed higher neurological function scores, shorter hospital stays, and better quality of life [17].

Razak [18] reported that the conventional nursing mode was not effective for patients with severe pregnancy hypertension syndrome, was unable to meet clinical needs, and it was difficult to use the mode for the effective prevention and control of diseases, but the comprehensive nursing intervention could improve the quality of patient care and clinical prognosis. We conducted comprehensive nursing interventions for the patients, including creating files, strengthening their education of prenatal care knowledge, making the patients correctly understand the disease and establish a belief in overcoming the disease. Also, monitoring the patients' fundus regularly as to find the risk of fundus lesions based on routine detection, to treat and intervene early on, thereby reducing the progression of retinopathy. Our study also showed that the number of patients in the observation group was significantly lower than the number in the control group, indicating that prenatal training and communication had a positive effect on the prevention and reduction of various diseases, and it was one of the important nursing care tasks during pregnancy, which is consistent with the findings of many other studies [19-21].

Studies have found that patients with pregnancy-induced hypertension often consume less essential nutrients, such as protein, calcium, and vitamins. Due to insufficient protein intake

Table 5. Comparison of the changes in postpartum blood pressure in the two groups

Group	The first month after delivery		The second month after delivery	
	Systolic blood pressure	Diastolic blood pressure	Systolic blood pressure	Diastolic blood pressure
Control group	150.4±6.2	98.6±5.3	145.8±15.3**	93.7±10.2**
Observation group	152.1±5.9	97.3±4.3	139.2±11.2**	88.5±8.5**
T	1.539	1.475	2.696	3.034
P	0.127	0.143	0.008	0.003

Note: compared with the first month after delivery, **P<0.01.

Table 6. Comparison of the nursing satisfaction in the two groups

Group	Number of cases	Satisfied	Basically satisfied	Dissatisfied	Satisfaction rate (%)
Control group	60	15	34	11	81.67%
Observation group	60	22	36	2	96.67%*

Note: compared with the control group, *P<0.05.

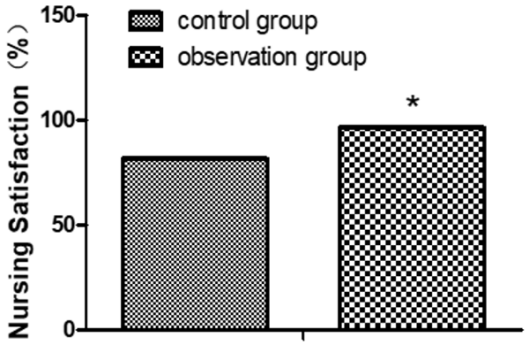

Figure 2. Comparisons of the nursing satisfaction between the two groups, *P<0.05.

and frequent proteinuria in patients, it is easy to cause a decrease in the patients' plasma osmotic pressure, which further leads to increased edema. The patient's diet has no nursing guidance, does not pay attention to the intake control of sodium and calcium, and will also aggravate hypertension and edema. Some patients do not receive dietary guidance, or they do not pay attention to their intake of sodium and calcium, which will aggravate hypertension and edema. Cormick [22] found that the incidence of pregnancy-induced hypertension and the severity of the disease in patients with high-calcium diets were significantly lower than they were in the patients with low-calcium diets. And the reason may be that when the blood calcium concentration is low, the intracellular flow of calcium ions into the cytoplasms increases, causing muscle contraction, which in turn promotes the occurrence of vasospasm and increases blood pressure. In our study, the patients in the observation group received scientific dietary guidance, controlled the intake of sodium and calcium, and they had a good control of their sodium and calcium intake, which reduced the incidence of pregnancy-induced hypertension and related complications, and the improvement effect was significant.

Patients with severe pregnancy-induced hypertension complicated with retinopathy are prone to serious diseases such as retinal detachment, so it is necessary to carry out scientific and comprehensive nursing measures. In this study, the patients were examined after admission, and antispasmodic prevention was performed before delivery to stabilize their blood pressure. At the same time, strict attention was paid to the patients who were discharged from the hospital. And the patients were satisfied with the comprehensive nursing intervention mode and had good prognoses. Aljabri [23, 24] also reported that the targeted comprehensive nursing intervention model is of important clinical significance for patients with preeclampsia, with a significant decrease in the incidence of patients with ocular fundus lesions, a significant decrease in retinal detachment, and a high quality of postpartum prognosis. In this study, all patients in the observation group complicated with retinopathy were mild and moderate, with no serious complications in the fundus postpartum, and the vision returned to normal level. Meanwhile, other adverse reactions were also significantly lower than those in the control group. [25] confirmed that patients with pregnancy-induced hypertension com-

bined with retinopathy maintain a low supine position after delivery, reduce their head and eye movements, keep an emotional balance, and avoid increased intraocular pressure, which may be beneficial to restoring the retinal neuroepithelium and pigment epithelium and reducing the risk of retinal detachment.

Although the comprehensive nursing intervention mode in this study is good for the prognosis of patients with severe pregnancy-induced hypertension syndrome complicated with retinopathy, there are defects because of its small clinical sample size and its use of the single-center study method. In the future, we will further expand the sample size and conduct multi-center, collaborative research.

In summary, the comprehensive nursing intervention mode can effectively control and reduce the incidence of retinopathy, alleviate the development of disease in patients with pregnancy-induced hypertension and fundus lesions, reduce the incidence of adverse reactions, help recover postpartum blood pressure, and improve the prognoses of patients, so we should attach great importance to it and step up its promotion clinically.

Disclosure of conflict of interest

None.

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