

Effectiveness of Implementing an Integrated Care Management Program for Rabies Vaccination Patients

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Abstract: *Objective:* To analyze the effect of implementing a comprehensive nursing management program for rabies vaccination patients. *Methods:* 100 cases of rabies vaccination patients were selected as observation objects from January 2022 to December 2023, and after enrollment, they were grouped according to the different nursing management programs, with 50 cases in each group. The control group was only given routine nursing management, and the observation group was combined with comprehensive nursing management on the basis of routine nursing management. The completion rate of vaccination, the rate of adverse reactions, and the satisfaction rate were assessed, comparing the clinical effects of different nursing management programs. *Results:* The completion rate of the 5th shot of rabies vaccination in the observation group was 82.00% higher than 64.00% in the control group ($\chi^2 = 4.1096, P < 0.05$); the rate of adverse reaction of vaccination in the observation group was 4.00% lower than 18.00% in the control group ($\chi^2 = 5.0051, P < 0.05$); the vaccination satisfaction in the observation group was 98.00% higher than 86.00% in the control group ($\chi^2 = 4.8913, P < 0.05$). *Conclusion:* The application of comprehensive nursing management program can help rabies vaccination patients to improve the completion rate of vaccination and reduce the incidence of adverse reactions to vaccination, with clear effects.

Keywords: Rabies; Vaccine; Vaccination reaction; Integrated nursing management

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1. Introduction

Rabies is a class of infectious diseases of animal origin, characterized by a short course of the disease (the natural course of the disease does not exceed 5 d) and a high case fatality rate (usually 100.00%). Rabies is mainly caused by rabies virus infection, which can directly invade the central nervous system. Rabies virus is mainly transmitted to humans via saliva after the bite of diseased animals^[1]. Timely and effective preventive treatment through wound treatment and vaccination, can prevent the occurrence of rabies and improve the survival rate of patients^[2]. However, some patients are prone to certain adverse reactions after vaccination, leading to a decrease in vaccination compliance and affecting the effectiveness of vaccination, so good nursing management is necessary^[3]. Research in this direction, for rabies vaccination patients to give integrated nursing

management program, observe the application of 50 vaccination patients, reported as follows.

2. Data and methods

2.1. General information

Using the comparative analysis method, 100 cases of rabies vaccination patients from January 2022 to December 2023 were taken as observation objects and were divided into the observation group (50 cases) and control group (50 cases) according to the difference of the nursing management program. In the observation group, male/female: 23 cases/27 cases; age: 6–65 years old/ (39.96 ± 4.72) years old; education level: 15 cases in junior high school and below, 19 cases in senior high school, 16 cases in college and above. In the control group, male/female: 24 cases/26 cases; age: 6–68 years old/ (39.68 ± 4.82) years old; education level: 13 cases in junior high school and below, 20 cases in senior high school, 17 cases in college and above. A comparison of the above baseline data between the two groups suggested $P > 0.05$, indicating comparability. The study was reviewed and approved by the Ethics Committee.

2.2. Inclusion and exclusion criteria

Inclusion criteria: (1) Patients with good mental status and stable vital signs; (2) In line with the rabies exposure prevention and treatment of rabies exposure criteria in the expert consensus^[4]; (3) All for the first-time vaccination with no history of rabies vaccination; (4) Mobilized by the enrollment of the group, know the process of the study, voluntary participation and compliance is good; (5) Informed consent, and obtain written documents.

Exclusion criteria: (1) The existence of allergies and contraindications to vaccine components; (2) In the acute exacerbation of a number of chronic diseases, such as coronary heart disease, chronic obstructive pulmonary disease, etc.; (3) Breastfeeding, pregnancy and other special stages of the patient; (4) Concomitant disorders, psychiatric system diseases.

2.3. Methods

The control group was given only routine nursing management: After admission, assess the basic information of the patients, understand the patients' wounds, and determine the vaccination program; standardize the operation of the vaccination steps in accordance with the norms of rabies vaccination, during which the patients were instructed on precautions, answered the patients' questions, etc., and when an adverse reaction was found, the attending physician was informed of the treatment.

The observation group was given comprehensive nursing management on the basis of the control group:

- (1) Checking and inspection management: Before vaccination, healthcare personnel needs to assess the basic situation of the patient, including medical history, allergy history, etc., and check the information of the rabies vaccine, including the date of production, expiration date, etc., and check the storage environment of the vaccine (temperature 2–8°C), to ensure that the rabies vaccine is used with high quality, and to avoid that the vaccine fails to meet the clinical requirements and cause adverse reactions.
- (2) Nursing care for adverse reactions: According to the type of adverse reactions, different nursing management modes are adopted.
 - (a) For local adverse reactions, such as pain, redness, swelling, itching, hard nodules and other symptoms, patients can recover on their own in a short period of time without other special treatment if the symptoms are more serious, then take the potato slice, white radish slices to make a local patch for 30–30min, or take the magnesium sulfate (50%) to make a local wet compress for 20–30min, two times a day, so as to play the effect of swelling and anti-inflammation;

- (b) For systemic adverse reactions, such as fever, fatigue, dizziness, etc., take targeted intervention; fever usually occurs within 24h after vaccination. For patients with mild fever with a body temperature below 38.5 °C, in the end of the vaccination within 1–2d, the symptoms can disappear on their own, and during this period, advise patients to drink more water and rest more. For patients with a high fever with a body temperature of 38.5 °C or more, they can cooperate with physical cooling and instruct patients to take antipyretic medication under the requirement of doctor’s prescription;
 - (c) For patients with urticaria and generalized itching, they need to pay attention to skin management, instruct patients to trim nails, prohibit scratching the skin, take medical swabs to gently wipe the itchy parts to alleviate itching, and within the scope of doctor’s prescription, carry out antiallergic medication. For patients with nausea and vomiting, patients can be instructed to maintain their daily diet with high-calorie and light foods.
- (3) Psychological care: In the process of rabies vaccination, if there is an adverse reaction, it may lead to anxiety and nervousness, which may affect the physical and mental state of the patient and the subsequent vaccination, so the medical personnel need to patiently do a good job of psychological counseling of the patient, informing him of the importance and necessity of the rabies vaccination, reminding the patient that the occurrence of adverse reactions is a normal phenomenon, which belongs to the curable and controllable items, and do not worry too much, and actively promote the rabies vaccination program. They should also actively answer patients’ questions, patiently answer patients’ questions, actively deal with their adverse reactions, and enhance their confidence in rabies vaccination.

2.4. Observation indicators

- (1) Vaccination completion rate: Both groups of patients received 5 shots of vaccine; the completion rate of each shot was counted.
- (2) Adverse reaction rate: Including local redness, swelling and pain, rash, anaphylactic shock, angioedema, urticaria, etc.; the total incidence rate is counted.
- (3) Satisfaction: After rabies vaccination, the questionnaire was filled out by the patients, covering information on service attitude, vaccination skills, professionalism treatment of adverse reactions, etc ^[5]. The questionnaire was scored from 0–100 points, and the satisfaction rate was defined according to the score range; if the score value was ≥ 90 points, “very satisfied” was recorded; if the score value was ≥ 70 points and < 90 points, “basically satisfied” was recorded.; if the score is < 70 points, “dissatisfied” is recorded; the total satisfaction rate (very satisfied rate + basically satisfied rate) is counted.

2.5. Statistical analysis

SPSS 22.0 software was used to analyze the research data, the count data were expressed as % and the test was performed by χ^2 . Measurement data (conforming to normal distribution) is expressed as mean \pm standard deviation (SD). The *t*-value was used for the test; the difference was considered statistically significant at $p < 0.05$.

3. Results

3.1. Vaccination completion rate

The completion rate of the 5th vaccination in the observation group was significantly higher than that in the control group ($p < 0.05$). See **Table 1**.

Table 1. Vaccination completion rate statistics (cases, %)

Group	Stitch 1	Stitch 2	Stitch 3	Stitch 4	Stitch 5
Observation group (<i>n</i> = 50)	50 (100.00)	48 (96.00)	45 (90.00)	43 (86.00)	41 (82.00)
Control group (<i>n</i> = 50)	50 (100.00)	47 (94.00)	41 (82.00)	36 (72.00)	32 (64.00)
χ^2	-	0.2105	1.3289	2.9536	4.1096
<i>P</i>	-	0.6463	0.2490	0.0858	0.0426

3.2. Adverse reaction rate

The incidence rate of adverse reactions in the observation group was significantly lower than that in the control group ($P < 0.05$). See **Table 2**.

Table 2. Adverse reaction rate statistics (*n*, %)

Group	Localized erythema and pain	Rash	Anaphylactic shock	Angioedema	Urticaria	Total incidence
Observation group (<i>n</i> = 50)	1 (2.00)	1 (2.00)	0	0	0	2 (4.00)
Control group (<i>n</i> = 50)	3 (6.00)	3 (6.00)	1 (2.00)	1 (2.00)	1 (2.00)	9 (18.00)
χ^2	-	-	-	-	-	5.0051
<i>P</i>	-	-	-	-	-	0.0252

3.3. Satisfaction

Compared with the control group, the satisfaction rate of vaccination was higher in the observation group ($P < 0.05$). See **Table 3**.

Table 3. Satisfaction statistics (cases, %)

Group	Very Satisfied	Mostly Satisfied	Dissatisfied	Total Satisfaction
Observation group (<i>n</i> = 50)	34 (68.00)	15 (30.00)	1 (2.00)	49 (98.00)
Control group (<i>n</i> = 50)	30 (60.00)	13 (26.00)	7 (14.00)	43 (86.00)
χ^2	-	-	-	4.8913
<i>P</i>	-	-	-	0.0269

4. Discussion

With the increasing number of pet owners in recent years, the incidence of pet injuries has gradually increased, seriously affecting people's lives and health [6]. Rabies vaccine is a vaccine against rabies, which is usually used to prevent rabies virus infection in humans and animals. When suffering from pet injuries, in addition to the correct rinsing and disinfection of exposed wounds, high-quality, standardized rabies vaccine injection is an important way to prevent the occurrence and development of rabies. Generally, rabies vaccines are safe and effective and are usually administered by the injectable route. The vaccine usually needs to be administered according to a specific vaccination program, including initial and booster shots. However, due to the influence of the patient's own psychological and physiological state, vaccination operation and other factors, patients are prone to various types of adverse reactions, which not only affect the progress of vaccination but also may

affect the patient's prognosis and increase the risk of death ^[7].

Comprehensive nursing management is a new clinical management model, which is designed based on the physiological and psychological needs of patients as well as the content of treatment so that the content of nursing management is systematic and hierarchical, close to the clinical needs of patients, and better utility of nursing ^[8]. In this study, comprehensive nursing management was applied to the observation group, and the data results showed that the completion rate of 5 shots of rabies vaccination was 82.00% in the observation group and 64.00% in the control group ($P < 0.05$), and the reasons were analyzed: In the checking and inspection management, the assessment and checking of the patient's relevant information was carried out immediately after admission to determine that the patient meets the needs of rabies vaccination and the vaccine's quality was checked to ensure that its maintenance is normal, and can play the vaccine's due anti-epidemic effect ^[9]. In addition, according to the requirements of vaccination, carry out the whole follow-up and supervision of the patients, reminding the patients to pay attention to the management according to the norms of vaccination and ensure the successful completion of the vaccination program.

The results of the study showed that the adverse reaction rate of rabies vaccination in the observation group was 4.00% and the control group was 18.00% ($P < 0.05$). Analysis of the reasons: In adverse reaction care, the possible adverse reactions during rabies vaccination are analyzed, and the adverse reactions are divided into two local and systemic, and targeted management measures are taken according to the clinical manifestations of different types of adverse reactions, such as for patients with fever, for patients with low fever need to wait for their relief, and certain health guidance is given and the patients are instructed to pay attention to rest and actively carry out nutritional support, etc. ^[10]. For patients with high fever, can take certain physical cooling measures and fever-reducing drug interventions in the case of medical advice through differentiated management initiatives so that the various nursing management measures to better play a targeted role in preventing or mitigating the occurrence of adverse reactions, to ensure the smoothness of the patient's vaccination ^[11].

The results of the study also showed that the satisfaction of rabies vaccination was 98.00% in the observation group and 86.00% in the control group ($P < 0.05$). Reasons analyzed include patients' satisfaction generally depends on their own comfort and quality of care. Therefore, the study provides physical and mental interventions to patients through integrated nursing management. In psychological care, during rabies vaccination, patients are prone to anxiety, tension and even depression and other adverse emotions due to the concern about their condition, coupled with the influence of adverse reactions, so nursing staff needs to pay attention to communicate with patients during vaccination, analyze their psychological state, pay attention to the generation of negative emotions and analyze the reasons for the generation of their adverse emotions. Through health education, distraction and other ways to ease the patients' negative emotions so that the patients actively cooperate with the health care measures to prevent the occurrence of adverse reactions, reduce the symptoms of adverse reactions, to ensure the effectiveness and safety of rabies vaccination ^[12].

5. Conclusion

In conclusion, a comprehensive nursing management program during rabies vaccination can help patients prevent adverse reactions, ensure vaccination completion rate, and improve patient satisfaction, which is worthy of reference.

Disclosure statement

The authors declare no conflict of interest.

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