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Applied analysis of humanized nursing combined with wet healing therapy to prevent bedsore

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Abstract. – OBJECTIVE: To analyze and evaluate the effects of humanized nursing combined with wet healing therapy to treat the stage II and III bedsores in hospitalized patients.

PATIENTS AND METHODS: From March 2013 to July 2014 we enrolled fifty patients with stage II and III bedsores. They were randomly divided into control group and experimental group, with 25 cases in each group. For the control group, we adopted a traditional method of treatment for pressure ulcer treatment, while the experimental group was treated with humanized nursing in combination with wet healing therapy. After 28 days, the treatment results in both groups were evaluated.

RESULTS: The improvement rate for patients in the experimental group was significantly higher than that of the control group. In the experimental group, the improvement rates for patients suffering from stage II and III pressure ulcers were significantly higher than those of the control group. The Branden score and the area of pressure ulcer were significantly decreased in the experimental group. The frequency of dressing change, the dressing time and the average cost of hospitalization in the experimental group were significantly lower.

CONCLUSIONS: The effect of wet healing therapy combined with humanized nursing in preventing and treating the bedsore is promising, and it is worthy of clinical promotion.

Key Words:
Humanized nursing, Wet healing, Bedsore.

Introduction

A bedsore is a kind of damage or necrosis occurred in human body tissues due to a long period of pressure which causes inadequate blood circulation in some areas. It is common among the elderly, incapacitated, and individuals who spend extended times in bed or a wheelchair, or cannot move certain body parts without help. Usually, traditional medicine and nursing are employed for bedsore treatment; however, experience indicated that the curative effects of these methods is not optimal[1]. Wet treatment method for bedsores was first suggested in 1962 by Winter G (Nature 1962; 193: 293-294) and was well received by some and soon was applied in Europe and the United States. In recent years, the method has been tried for adult wound treatment and care, and promising results have been obtained[2]. In this study, we adopted the humanized nursing combined with wet healing therapy to treat hospitalized patients with multi-stage bedsores.

Patients and Methods

Patients

From March 2013 to July 2014 we enrolled fifty patients with stage II and III bedsores. We chose them amongst patients who were continuously admitted in our hospital. They were randomly divided them into control and experimental groups, with 25 cases in each group. There were 20 males and 30 females, aging from 59 to 80 years old with the average age of (63.0 ± 2.5) years. There were 21 cases in stage II and 29 cases in stage III bedsores. The position of pressure ulcers varied in our patients: in 31 cases pressure ulcers were in sacroiliac, in 11 cases the ulcers were in the hip joint and in 8 we observed ulcers in the hip joint and the ankle. Branden scores for our patients ranged from 10 to 22 points (average score was 14.0 ± 0.2) and the pressure area for patients ranged from (2 cm × 1 cm) to (10 cm × 8 cm). The age, gender, stage, distribution, Branden score and pressure areas of the bedsores were compared in both groups, and no significant

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differences ($p > 0.05$) were found. All patients were in line with the new pressure ulcer staging method issued by American NPUAP Association (2007)[3].

Methods

Treatment Method

The health constitution and the wound condition of local pressure ulcers in the two groups were evaluated. Wet healing therapy combined with humanized nursing was used for the prevention and treatment of pressure ulcers.

Control Group

For stage II wounds without blisters, we first disinfected the wound plus the 2 cm radius around it using 0.5% iodophor. This was repeated 3 times a day, and the wound was exposed to air until it naturally scabs. For stage II wounds with blisters, we first extracted the liquid inside the blisters, and then covered the wound with sterile gauze. In the case of shifted or soaked gauze, it was replaced immediately. For stage III wounds we disinfected the wound using hydroxide or iodophor. For necrotic tissue we used debridement and removed purulent secretion using ethacridine lactate gauze to fill the potential site of pressure ulcer. Finally, we covered the wound with sterile dressings, and dressings were changed every 1 to 2 days.

Experimental Group

For stage II wounds without blisters, we first cleaned the wound and the skin around the bedsores using physiological saline. If there were blisters, we pasted Comfeel hydrocolloid film after cleaning and then with a syringe we penetrated the film and extracted the liquid. Dressings were changed when there was exudation of the liquid. If the wound was lacerated, we cleaned it using conventional method. For patients with excessive liquid leaking, we pasted the wound with foam paster. Appropriated size of film was used to cover the wound surface plus 2 cm around it. The film was replaced once the color was changed and the fluid seepage area was more than 1/3. For Stage III wounds, the surface was cleaned with physiological saline and cotton. In the case of yellow wounds, we adopted surgical debridement assisted by autolytic debridement. We removed the necrotic tissue using surgical methods (blade, sterile scissors). Then, we used the debridement glue to paste the wound and paste the osmotic absorption. In the case of an infected wound, we applied silver ion alginate paster and carefully checked the dressing and the condition of surrounding skin. If there was seepage around the paster, and the milky white area was greater than 1/3, we replaced it immediately (normally it was changed every 1 to 2 days). When the wounds had new granulation tissue, we carried out a second cleaning and applied-foam paster (in average, once a week). At the same time, in the treatment period, we provided humanized nursing for patients. We turned them every two hours, and treated them with outmost gentleness. We adjusted the bed elevation to below 30 degrees to avoid the unnecessary pressure on the sacral tail while making sure that patients' skin was dry and smooth. We tried to use the air cushion beds and carefully improved the nutritional quality. For discharged patients we provided health education and informed them and their families about the risk factors associated with pressure ulcers[4].

Evaluation Index

Treatment and healing conditions of pressure ulcer wounds, such as wound healing effect, dressing change frequency and end efficiency were evaluated 28 days after the admission. The effects of treatment were assessed and quantitative scores were prepared according to the PUSH established by pressure ulcer expert group of United States. The method used for wound healing effects evaluation was mainly based on the affected areas, the tissue types and the total amount of fluid volume.

Criterion for Judgment

(1) Healing: When the wounds were healed and epithelium was fully regenerated and covered, a zero PUSH score was recorded (2) Effectiveness: when the skin appearance was not abnormal, the total score of PUSH decreased. (3) Ineffectiveness: when there was no amelioration in the wound's condition, the total score of PUSH stayed the same. (4) Deterioration: when surrounding skin festered, color deepened and in some cases secondary infections occurred, the total score of PUSH increased.

Statistical Analysis

We used SPSS17.0 software (SPSS Inc., Chicago, IL, USA) for data analysis. The measurement data were expressed by mean ± standard deviation and *t*-test was used in comparison

Table I. Comparison of wound healing process between the two groups.

Groups	Cases	Healing	Improvement	Ineffectiveness	Deterioration	Improvement rate of patients with stage II pressure ulcer (%)	Improvement rate of patients with stage III pressure ulcer (%)
Experimental group	25	10	13	2	0	92.31	91.67
Control group	25	6	9	6	4	71.43	45.45

between groups. Counting data were expressed by cases or a percentage and chi-square test was used in comparison between groups. Differences were statistically significant if $p < 0.05$.

Results

The Comparison of Wound Healing Effects in Two Groups

The improvement rate for the experimental group was meaningfully higher than that of the control group, and the difference was statistically significant [92.0% in the experimental group *vs.* 60.0% for the control group, $\chi^2 = 5.031$, $p < 0.001$]. In the experimental group, we had 13 patients with stage II pressure ulcers and 12 with stage III ulcers. In stage II patients, the improvement rate was 92.31% while stage III patients had a 91.67% improvement. In the control group, there were 14 patients with stage II pressure ulcers and 11 with stage III pressure ulcers. Amongst them, the improvement rate for state II patients was 71.43% and the rate for stage III patients was 45.45%. The improvement rates for patients with stage II and III pressure ulcers in the experimental group were meaningfully higher than those in the control group and the comparison of sub groups was statistically significant (92.31%/71.43%, $\chi^2 = 4.237$, $p < 0.001$; 91.67%/45.45%, $\chi^2 = 4.932$, $p < 0.001$) (Table I).

Comparison of Branden Scores and Area of Pressure Ulcers in Both Groups Before and After the Treatment

The Branden and area of pressure sores in two groups before treatment were compared and the differences were not statistically significant ($p > 0.05$). The Branden scores and area of pressure sores after the treatment in the experimental group were significantly less than those in the control group and the differences were statistically significant ($p < 0.05$) (Table II).

Analysis of Dressing Change Frequency, Time and Cost of Treatment in Both Groups

The frequency of dressing change, the time of dressing change and the average cost of hospitalization were significantly lower in the experimental group, and the differences were statistically significant ($p < 0.001$) (Table III).

Discussion

This study showed that the improvement rate in the experimental group was significantly higher than that of the control group according to the effect evaluation based on pressure ulcer healing score table. Among them, the improvement rates for patients with stage II and III pressure ulcers in the experimental group were significantly

Table II. Comparisons of Branden scores and area of pressure sores before and after treatment for both groups.

Groups	Branden score		Area of pressure sore (cm^2)	
	Before treatment	After treatment	Before treatment	After treatment
Experimental group	14.6 ± 3.5	7.8 ± 1.9	32.4 ± 10.5	16.9 ± 4.2
Control group	13.8 ± 2.3	11.4 ± 3.1	33.7 ± 8.2	27.1 ± 6.3
t	0.634	2.914	0.539	3.061
p	0.837	0.032	0.916	0.025

Table III. Analysis of dressing change frequency, time and cost of treatment for two groups of patients.

Groups	Frequency of dressing change (times)	Time of dressing change (minutes)	Average cost (yuan)
Experimental group	7.8 ± 0.9	20.9 ± 8.4	2675.4 ± 234.5
Control group	16.2 ± 2.7	31.8 ± 12.6	7826.5 ± 1342.1
t	5.316	4.813	6.809
p	< 0.001	< 0.001	< 0.001

higher than those in the control group. The comparison of sub groups was also statistically significant. Both dressing methods were useful in the wound healing process but the wet healing therapy combined with humanized nursing intervention was more effective for the treatment of stage II and stage III pressure ulcers. Prior studies on wound healing confirmed that[5,6] drying could aggravate the damage on the tissues, while wetting is considered more favorable to improve the wound healing process. Wet treatment can improve the formation of the wound epithelial cells and achieve a natural healing effects. Besides, its healing speed is faster than that in dry treatment. In order to repair the epithelial tissue after the injury, the wound must be sealed, and the growth of keratinocytes should be promoted. These conditions would accelerate the healing process and could increase the epidermal regeneration rate up to 40%. In a moist environment, it is less likely that the dressing be attached to the wound, therefore, changing the dressing is much easier and there will be no damage to the granulation tissue or epithelial tissue. This creates a much better condition for patients because they would not suffer from pain during the procedure[7,8].

Our control group was basically treated with sterile gauze after dressing change. During the process of dressing change, gauze dressing was simple to paste and it was not conducive to the liquid absorption. When the quantity of the fluid accumulated in the wound was excessive, the dressing was changed more frequently. For the experimental group, we used Comfeel series dressing according to the actual stage of the wound, which effectively improved the absorption of the fluid. Pressure ulcer wounds were confined to a closed environment, preventing the invasion of external microorganisms[9,10]. Also, during the treatment the patients were treated with humanized nursing, such as psychological guidance and health education. Our nurses also turned them gently every two hours, and kept their skin smooth and dry[11,12]. This method prolonged the duration of dressing change and reduced the workload for nursing staff.

Conclusions

The effect of wet healing therapy combined with humanized nursing in preventing and treating the bedsore is promising, and it is worthy of clinical promotion.

Conflict of Interest

The Authors declare that there are no conflicts of interest.

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