Investigation on traumatic psychological stress reaction of patients undergoing traumatic fracture surgery

Luping Liu, Xingxiong Jiang, Minglin Dong, Xiang Guo, Jingwu Liao*

The Second Affiliated Hospital of Kunming Medical University, Kunming 650101, China

*Correspondence author: Jing-Wu Liao, E-mail: liaojingwu_hx@sohu.com

Abstract: Objective: To explore the influence of psychological counseling based on psychological assessment scale on patients' stress state and bad psychology in emergency operation of traumatic fracture. Methods: Hamilton Depression Scale (HAMA) and Self-rating Depression Scale (SDS) were used to evaluate the anxiety and depression of 65 patients with traumatic fracture. Patients in the routine group received routine nursing, closely monitored the vital signs of patients, established venous channels, assisted patients in improving related auxiliary examinations, and gave relevant nursing interventions according to doctor's advice. Patients in the intervention group were given psychological counseling based on psychological assessment scale on the basis of routine nursing. Results: There was no significant difference in HAMA and SDS scores between the two groups at admission (P > 0.05). When entering the operating room, the scores of HAMA and SDS in the intervention group were lower than those in the routine group, and the difference was statistically significant (P < 0.05). The resilience of patients with traumatic fracture is at a medium level, and the total score of resilience is (51.20 ±13.96), which is lower than the domestic norm (t =-20.217, P < 0.01). Conclusion: Psychological counseling evaluated by psychological scale can reduce the patients' bad mood and stress state before operation.

1. Introduction

Patients with acute traumatic fracture face sudden severe trauma, and most of them have severe psychological reactions, which show negative emotions such as fear, anxiety, sadness, depression, loneliness, loss of help, and even lead to mental illness. In severe cases, malignant events such as falling from a building and suicide occur. If psychological intervention is not carried out in time, serious losses will be caused to families and society. Psychology calls the individual's ability to effectively cope with and adapt to pressure dilemma or stress "psychological resilience" [1-2]. Resilience has always been a hot spot in the field of positive psychology. Related studies have found that good psychological resilience can prevent and alleviate the occurrence and symptoms of stress disorder to a certain extent [3].

Adverse emotions can destroy the physiological balance of patients, aggravate the occurrence and development of diseases, and increase the risk of surgery. Psychological counseling is the key to alleviate patients' bad emotions. Different patients have different psychological bearing capacity and bad emotions. Psychological assessment scale is the main method to evaluate patients' psychological status. Based on the psychological assessment scale, this study implemented psychological counseling in patients with traumatic fracture undergoing emergency operation. In order to explore the influence on preoperative stress and psychological status of patients, the report is as follows.

2. Objects and methods

2.1. Objects

Sixty-five patients with traumatic fracture from April 2019 to September 2020 were selected as research objects. Inclusion criteria [4]: Adult traumatic fracture patients; There is no serious damage

to cognitive ability after injury, and he can fill out questionnaires or answer questions independently; No previous history of mental illness; After treatment, the vital signs were basically stable and there was no danger to life. Exclusion criteria: central nervous system injury, coma and mental abnormality caused by trauma; Patients with pathological fractures such as tumor, osteoporosis and tuberculosis; There are pain-causing diseases such as herpes zoster and chronic wounds before injury; Complicated with severe cardiovascular and cerebrovascular diseases and blood diseases; Skull fracture or severe nerve injury. There were 35 males and 30 females. The average age was (38. 12±4.98) years, ranging from 21 to 76 years. Among them, acute stress disorder occurred in 21 cases.

2.2. Methods

Patients in the routine group received routine nursing, closely monitored the vital signs of patients, established venous channels, assisted patients in improving related auxiliary examinations, and gave relevant nursing interventions according to doctor's advice. Patients in the intervention group were given psychological counseling based on the psychological assessment scale on the basis of routine nursing, including the following aspects:

(1) Psychological assessment scale

In this study, Hamilton Depression Scale (HAMA) and Self-rating Depression Scale (SDS), which are commonly used in clinic, were used to evaluate patients' anxiety and depression. The psychological scale evaluation was completed within one hour after the patients were admitted to hospital, and the professional nurses guided the patients to complete it.

HAMA score: The patients' guilt, inferiority complex, suicide, work and interest, slowness and systemic symptoms are evaluated. < 7 is no anxiety, 8-18 is mild, 19-33 is moderate, and > 33 is severe [5].

SDS score: 20 items such as sadness, self-esteem, anxiety, hesitation, motivation and sadness are scored, and the final score is obtained after correction. The score < 11 is no depression, 12-21 is mild, 22-31 is moderate, and > 31 is severe [6].

(2) Quality control

Investigators with good communication skills are selected, and after unified training, they can quickly establish a good relationship with patients during investigation. Prepare questionnaires and materials before investigation.

Investigators read all the instructions, precautions and scoring criteria of the questionnaires in detail, deeply understand the contents of the questionnaires, become familiar with the questionnaires used, and apply the questionnaires to some patients in advance to become familiar with the actual use of the questionnaires. Adopt one-to-one interview, select research objects according to strict inclusion and exclusion criteria, and unify investigation methods and guidance language. Respect the patient, introduce the identity of the investigator, the purpose and significance of the investigation, communicate well with the patient, gain trust, and make the patient answer truthfully. For some patients who can't answer because of trauma, the investigator reads the questionnaire and answers according to the patient's true wishes. Investigators shall be responsible for the preliminary examination of the recovered questionnaire, and recover it after no missing items. Data shall be entered by two persons, and logical check shall be conducted in time to strictly control the quality of the questionnaire.

2.3. Statistical analysis

Excel software was used to set up the database, SPSS 17.0 statistical software was used for statistical processing, and the measurement data were expressed as ($\bar{x} \pm s$), and T-test, variance analysis, Person correlation analysis and linear regression analysis were carried out. $P < 0.05$ was the difference with statistical significance.

3. Result

3.1. Psychoelastic characteristics of patients with traumatic fracture

The score of psychoelasticity in traumatic fracture patients: the total score of psychoelasticity of traumatic fracture patients (51.20 ± 13.96) was lower than that of the domestic norm [(65.4 ± 13.9), n = 560], and the difference was statistically significant (t = -19.5317, P < 0.01). The average scores of tenacity, self-improvement and optimism are strength, optimism and tenacity from high to low. See table 1.

Table 1 The total score of resilience and the scores of each dimension in patients with traumatic fracture($\bar{x} \pm s$)

Project	Number of entries	Aggregate score	Average score of entries
Tough dimension	14	24.36±7.25	1.89±0.77
Strength dimension	7	17.25±5.33	2.07±0.66
Optimistic dimension	4	8.61±2.14	2.74±0.68
Total amount table	25	51.20±13.96	2.01±0.55

3.2. Multivariate logistic regression analysis of acute stress disorder in patients with traumatic fracture after operation

Multivariate logistic regression analysis showed that VAS score > 7, severe trauma, past trauma history and anxiety score > 14 were independent risk factors of acute stress disorder after traumatic fracture (P < 0.05), as shown in Table 2.

Table 2 Logistics regression analysis of multiple factors leading to postoperative acute stress disorder in patients with traumatic fracture

Variable	β	SE	$Wald\chi^2$	P	OR	95%CI
The VAS score after injury was > 7 points	1.024	0.302	8.856	0.008	2.776	1.821-9.932
Severe trauma	0.823	0.332	7.014	0.003	3.361	1.117-8.825
Past trauma history	1.125	0.358	10.932	0.021	2.445	2.336-8.991
Anxiety score > 14	1.223	0.417	7.821	0.027	2.967	1.425-7.894

3.3. Comparison of scores of adverse emotions between two groups

On admission, there was no significant difference in HAMA and SDS scores between the two groups (P > 0.05). When entering the operating room, the scores of HAMA and SDS in the intervention group were lower than those in the routine group, and the difference was statistically significant (P < 0.05). See table 3.

Table 3 Comparison of bad mood scores between two groups

Group	Number of cases	HAMA score		SDS score	
		On admission	When entering the operating room	On admission	When entering the operating room
Intervention group	35	23.6±5.5	15.2±5.1	22.8±4.2	14.5±4.4
General group	30	22.1±6.7	23.7±7.5	22.2±3.5	21.7±4.1
T value		0.4251	5.2076	0.8236	7.7228
P value		0.6637	0.0001	00401	0.0001

4. Discussion

The emergence of acute stress disorder is often accompanied by loss of self-sense, disorder of

self-image, dysfunction, sense of burden, etc. after injury, which is influenced by persistent and extremely painful psychological environment [8]. During hospitalization, patients are tired, stressed, depressed and unable to find an outlet, which will inevitably lead to psychological stress disorder in different degrees. Previous reports showed that the incidence of acute stress disorder in emergency trauma patients ranged from 14. 65% to 67. 44% [9].

The results showed that the total average score of psychological resilience in patients with traumatic fracture was (51.20 13.96), which was at a medium level, which was lower than that of the average adult in China (65.4±13.9) [10], and significantly lower than that of the American community population (80.4 ±12.8) [11]. It shows that the psychological resilience level of patients in this population is deviated, which suggests that the ability of psychological resilience in dealing with traumatic fracture has declined. In the three dimensions of psychological resilience, the strength score is slightly higher, and the tenacity score is slightly lower, which indicates that patients can cope with the disease pressure and torture with self-improvement, but at the same time, they are not tough enough. This may be because traumatic violence is often unexpected, which brings great changes in pain, pain during hospitalization and the torture of bad emotions, which make it difficult for patients to continue to face. Traumatic events often make patients fall into an unstable state, and lead them to be more prone to stress, such as chaotic interpersonal relationships or environmental post-traumatic stress depression, which is not conducive to their psychological rehabilitation when facing the pain of activation [12]. Scholars believe that psychological resilience is a dynamic process, which can be improved and enhanced through appropriate intervention and training.

This investigation shows that VAS score > 7 after injury is one of the independent risk factors of acute stress disorder, and intense pain, as a strong and lasting stress source, has a serious impact on patients' sleep and mood; Strong pain can easily lead to imbalance of physiological functions of the body, and aggravate the damage of the body. If sustained excessive pain stress is not effectively alleviated, stress disorder can be produced [13]. There are potential life-threatening factors in severe trauma, and some patients even face amputation and disfigurement; This kind of patients need mechanical ventilation, continuous blood filtration, intensive care, etc., and the tedious treatment process is easy for patients to have fear of death, which will also cause severe psychological stress disorder [14]. For severe trauma patients, we can refer to the cognitive exposure therapy mainly used for natural disaster patients in the past, through cognitive education of acute stress disorder, exposure to trauma memory, gradual, step-by-step relaxation training, self-repetition and other cognitive exposure interventions, to avoid blindly escaping psychology after major trauma, and to reduce stress reaction by facing up to injuries and facing them positively [15].

In this study, psychological assessment scale was used to evaluate the psychological state of patients, and psychological counseling nursing intervention was implemented according to different psychological states of patients. Compared with conventional nursing intervention, it significantly maintained the stability of preoperative blood pressure and HR level, and reduced anxiety and depression of patients, with statistical significance (P < 0.05). Different patients' psychological bearing capacity and adverse emotional state are different, so psychological counseling should also be implemented individually. Psychological assessment scale is the main auxiliary tool for evaluating patients' psychological state in clinic, which can accurately grasp the psychological state and guide the implementation of targeted psychological counseling, thus reducing patients' adverse emotions and preoperative stress state.

To sum up, the level of resilience of patients with traumatic fracture needs to be further improved. This study reveals that resilience can alleviate the symptoms of ASD. Based on the attribute that resilience can be stimulated from difficulties [16], medical staff can improve the people's ability to cope with stress changes and reduce the possibility of ASD. At the same time, we should attach great importance to women, young and middle-aged, introverted and pain-sensitive patients, improve the level of psychological elasticity, explore the source of strength for individual growth, minimize the negative impact of adversity on individuals, find out the most suitable conditions for growth and development, and make individuals get the best physical and

mental health.

5. Conclusions

Traumatic fracture patients are prone to acute stress disorder, which is affected by anxiety, severe trauma, past trauma history, post-injury VAS score and other factors. Therefore, targeted nursing measures should be taken according to relevant factors to reduce the risk of acute stress disorder. Psychological scale evaluation of psychological counseling in patients with traumatic fracture undergoing emergency operation can alleviate the patients' bad mood and stress state before operation.

References

[1] D Kim, Shin H J, Kim S W, et al. (2017). Psychological Problems of Pneumothorax According to Resilience, Stress, and Post-Traumatic Stress [J]. Psychiatry Investigation, vol. 14, no. 6, pp. 795-800.

[2] Christian A B, Grigorian A, Nahmias J, et al. (2020). Comparison of surgical fixation and non-operative management in patients with traumatic sternum fracture [J]. European Journal of Trauma and Emergency Surgery, no. 1, pp. 1-6.

[3] Landers Z A, Jethanandani R, Lee S K, et al. (2018). The Psychological Impact of Adult Traumatic Brachial Plexus Injury[J]. J Hand Surg Am, vol. 06, no. 10, pp. 120-125.

[4] Su Xiangting. (2017). Effects of Dexmedetomidine on Intraspinal Anesthesia Surgery and Influence on Stress Reaction of Patients. Medicine and Health Care, vol. 025, no. 008, pp. 21-22,24.

[5] Chen Hui, Zhang Hong. (2019). Post-traumatic stress disorder in patients undergoing cardiovascular bypass surgery and its influence-cing factors. chinese journal of cardiovascular rehabilitation medicine, vol. 028, no. 001, pp. 21-25.

[6] Chen Z, Wang G, Jiang C. Posttraumatic stress symptoms (PTSS) in patients with Cushing's disease before and after surgery: A prospective study[J]. Journal of Clinical Neuroscience, 2019, 66:1-6.

[7] Jaimie G. Prevalence and prognosis of stress disorders: a review of the epidemiologic literature [J]. Clinical Epidemiology, 2017, 9:251-260.

[8] Lv K, Yuan Q, Fu P, et al. (2020). Impact of fibrinogen level on the prognosis of patients with traumatic brain injury: a single-center analysis of 2570 patients [J]. World Journal of Emergency Surgery, vol. 15, no. 1, pp. 54.

[9] Hong Yong, Xiao Zhentao, Zhou Minwei, Liu Jianzhong. (2020). Effects of different doses of dexmedetomidine on stress disorder in patients undergoing accidental trauma surgery. Chinese Journal of Coal Industry Medicine, vol. 23, no. 06, pp. 95-99.

[10] Qiu Liangcheng, Chen Yanqing, Wu Xiaodan, et al. (2018). Effect of dexmedetomidine on acute post-traumatic stress disorder in female patients. Chinese Journal of Anesthesiology, no. 5, pp. 521-524.

[11] Yang Yang, Luan Xiaorong. (2020). Study on the status quo and influencing factors of acute stress reaction in patients with occupational hand injury. Journal of Nursing Training, vol. 035, no. 010, pp. 869-873.

[12] Tang Xiao-Jing, Chen Chang-Xiang. (2019). Correlation between acute stress response and resilience and anxiety in patients after biliary tract surgery. Occupational and Health, vol. 35, no. 011, pp. 1532-1535.

[13] Qian Bing. (2017). Effect of dexmedetomidine on symptoms related to acute stress disorder in elderly patients undergoing hip fracture surgery. Electronic Journal of Clinical Medical Literature,

vol. 4, no. 037, pp. 7288-7289.

[14] Xu Xiaoling, Xu Xiangxiang, Xu Shuying, et al. (2019). Analysis of risk factors affecting acute stress disorder in patients with traumatic hip fracture. Chinese Hospital Statistics, vol. 26, no. 03, pp. 53-56.

[15] Lu hai-Shen, Huang hong-bo, fan Jin, et al. (2018). Correlation analysis between psychological resilience and acute stress disorder and prognosis of patients with traumatic fracture. Chinese journal of frontier medicine (electronic edition), vol.10, no. 10, pp. 71-75.

[16] Chang Lipeng, Yuan Taizhen, Ying Xu, et al. (2018). Independent risk factors and intervention measures of acute stress disorder in hospitalized patients with traumatic fracture. Anhui Medical Science, vol. 39, no. 10, pp. 23-27.