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Perspectives

Reasons and countermeasures for the difficulty in implementing early activities in ICU patients with mechanical ventilation

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Abstract

Patients with mechanical ventilation in the Intensive Care Unit (ICU) can improve their muscle strength, shorten the duration of mechanical ventilation, reduce the occurrence of Intensive Care Unit Acquired-Weakness (ICUAW) and delirium by implementing early activities. However, due to the lack of relevant knowledge of early activities of ICU patients with mechanical ventilation, resources and equipment to implement early activities, and standardized safety practice guidelines for early activities, the implementation rate of early activities of ICU patients with mechanical ventilation in China is relatively low. In view of the above problems, this paper proposes to strengthen the training of relevant personnel, establish a professional management team for early activities, and formulate standardized activity plans, to provide theoretical guidance for the implementation of early activities of ICU patients with mechanical ventilation in China, and further improve the implementation rate of early activities of ICU patients with mechanical ventilation.

Key words: Intensive Care Unit (ICU); Mechanical ventilation; Early activities; Reasons for implementation difficulties; Countermeasures.

Introduction

Mechanical Ventilation refers to the method of using a ventilator in support of or in lieu of respiration in patients with respiratory failure who cannot maintain normal gas exchange in the respiratory organs (1, 2). In recent years, mechanic-

al ventilation has been widely used in Intensive Care Unit (ICU) as an important medical treatment for severe diseases. Zhang min (3) pointed out that since ICU patients would experience varying degrees of pain during rest and medical operation, so they should have bed rest or be analgesic and sedated, but these measures are likely to lead to decreased muscle strength, bone calcium loss, muscle atrophy and even prolonged mechanical ventilation time (5-7). Early mobilization refers to the patients with stable vital signs who engage in physical labor involving ventilation, blood perfusion, circulation, muscle metabolism and other physiological functions, to improve muscle strength, shorten ventilation time and reduce related complications (8-10). However, the implementation rate of early mobilization of domestic ICU patients with mechanical ventilation is relatively low, and there are few related studies. Therefore, the difficulties affecting early mobilization of ICU patients with mechanical ventilation at home and abroad were summarized, and countermeasures were proposed on this basis, to provide reference for clinical nursing practice of ICU patients with mechanical ventilation.

1. Implementation mode and effect of early mobilization in ICU patients with mechanical ventilation

1.1 Implementation of early mobilization in ICU patients with mechanical ventilation

Schmidt pointed out that lying in bed for 24 hours loses 20% of muscle capacity (11). Therefore, patients with mechanical ventilation in ICU should be evaluated every 24 hours for consciousness, pupil, muscle strength and degree of coordination (12), to carry out early mobilization as early as possible (13). In China, activities carried out 5-7 days after mechanical ventilation are also included in the scope of early activities (9). ABCDE intervention is mainly used in the management of patients with mechanical ventilation: A (Sedation Awakening Trial, SAT); B (Spontaneous Breathing exercise, SBT); C (Choice of Analgesia and Sedation); D(Delirium Prevention and Management); E (Early Physical Mobility) (14).

Early mobilization including: (1) Pre-activity evaluation: ICU nurses are required to assess daily the patient's respiratory, cardiovascular, and neurological functions, as well as surgical and medication status, to determine whether the patient is ready for early mobilization. (2) Choose the activity mode: the early mobilization group chooses the activity mode according to the assessment results, including Neuromuscular Electrical Stimulation (NMES), hand grip strength training instrument, bedside dynamometer, etc. And constantly increasing the activity time and angle. (3) Start activity indicators: response to language stimulus; RASS score: -2 to+2; FiO2<0.60; PEEP<10cmH2O; SPO2>88% when at rest; no vasoactive drugs were used; no arrhythmia; no intracranial hypertension. (4) Activity termination index: systolic blood pressure>180mmHg or drop more than 20% of the basic blood pressure; heart rate increased more than 70% of the base heart rate or decreased by 20%; The decrease of SPO2 to 90% indicates the termination of activity (14).

To sum up, the timing of early mobilization of ICU patients with mechanical ventilation is not uniform, but most studies believe that the earlier the early activity, the better the prognosis (15,16). The early mobilization lacks detailed and specific management measures, precautions, emergency treatment and other contents (17).

1.2 The effect of early mobilization in ICU patients with mechanical ventilation

1.2.1 Safety of early mobilization in patients with mechanical ventilation

ICU patients with mechanical ventilation are seriously ill, and safety should be given top priority during early activities (18). Therefore, early activities safety needs to be evaluated before, during and after the implementation of the activity. Liu conducted an observational study on 232

patients with mechanical ventilation and found that the incidence of adverse events was 2.2%, among which the rate of racheal tube disconnection was very low (19), which was like the results of Bailey's investigation on 103 patients in early mobilization of the patients with mechanical ventilation (20). Therefore, when the patient's vital signs are stable and no other treatment is needed, early mobilization can be carried out after full evaluation and adequate safety protection, and the risk of adverse events will not be increased (21,22,23).

1.2.2 Early mobilization can improve the ICUAW

Intensive Care Unit Acquired-Weakness (ICUAW) refers to the Weakness state of ICU patients without potential pathogenic factors, which is manifested as difficulty in going offline, Weakness of limbs, neuromuscular paralysis, or atrophy, etc. (5). Studies have shown that 25-100% of ICU inpatients are at risk for acquired weakness (24). Eggmann has said: the most important causes of acquired weakness in ICU are long-term bed rest and immobilization, while early mobilization strengthens the motor ability of neuromuscular through active or passive ways. Continuous early activities can effectively remove the influencing factors of weakness, decrease the occurrence of acquired weakness in ICU, and thus improve the quality of life (25), consistent with the results Roberson here (26).

1.2.3 Early mobilization can reduce ICU delirium

Delirium is called acute brain syndrome; the main manifestations are impaired cognitive functions such as impaired consciousness and inattention. Shehabi (27) investigated on ICU mechanical ventilation patients and found that continuous deep sedation would increase the occurrence of delirium, even delay the time of taking off the tube, and increase the risk of death. Early mobilization can effectively reduce the incidence of delirium within 48 hours after admission to the ICU (28,29). Schaller has conducted experiments in 5 icus in Australia, the United States, Germany and other countries, including 200 subjects. The results confirmed that early mobilization can reduce the occurrence of delirium and weakness, even reduce the complications related to mechanical ventilation, promote early extubation, shorten the length of hospital stay, and accelerate the recovery of functions (30).

2. Reasons for the difficulty in performing early mobilization in ICU patients with mechanical ventilation

2.1 Insufficient understanding of the early mobilization of patients with mechanical ventilation

The early activities were dominated by medical staff, with the cooperation of patients and their families. However, the study found that all three of them lack the understanding of the early mobilization of patients with mechanical ventilation. (1) Medical staff lack relevant knowledge. Tian Keping once conducted a survey on 424 ICU medical staff and found that only 38% of ICU medical staff knew about the early mobilization of mechanical ventilation (31). The interview of Curtis found that the nurse understands the advantage of early mobilization over mechanical ventilation but is overly concerned about the safety of mobilization and the individual patient, (32), similar to the research results of Cha Liling (33). (2) Medical tradition restricting the patient and family, most of the patient and family think the critical patients should stay in bed for a long time, especially after endotracheal intubation or tracheotomy, patients' early mobilization will directly lead to tube shedding, wound bleeding, dehiscence, pain and so on, so they are opposed to early mobilization, which is an important reason for the low implementation rate of early mobilization (34).

2.2 Lack of equipment resources to implement early mobilization

The implementation of early mobilization requires substantial human and financial support. In terms of human support, ICU early campaigns need interdisciplinary medical personnel to cooperate with each other, including doctors, nurses, rehabilitation therapists, respiratory therapists, etc. However, medical staff are often faced with huge workload, and it is difficult to have extra energy to establish early mobilization management groups, let alone one-to-one guidance for patients to carry out early activities. From the perspective of material resources, early mobilization needs the help of relevant instruments, such as walking AIDS, portable mobile ventilators, etc., while the medical equipment resources of Chinese hospitals are not yet perfect. The deficiency of these two parts seriously affects the implementation of early mobilization and aggravates the difficulties in the implementation of it.

2.3 Lack of standardized guidelines for early mobilization

Compared with ABCDE management mode of foreign ICU patients with mechanical ventilation, early mobilization in China started slow, lack of standardization of early mobilization management process, most of the activity according to patients condition, For example: consciousness condition is poorer person, stop to use sedative analgesic medicine in the daytime, pass to use neuromuscular electric stimulation or the activity such as bicycle beside the bed, help its restore consciousness, encourage open eye, clench fist, drive up upper limb to wait; Those with good consciousness are encouraged to sit up on the bed, beside the bed and get out of bed. There is no standardized guide for early activities as theoretical guidance, and there is a lack of indications, contraindications, timing, manner, matters needing attention, emergency treatment and end indication of early activities (35).Yang Liping also pointed out that at present, the early mobilization lack professional organization training, textbook explanation, high-level evidence, etc. (36).

3. Countermeasure to deal with early mobilization of patients with mechanical ventilation

3.1 Strengthen the training of medical staff and implement education for patients and their families

In view of the lack of understanding of early mobilization, strengthening education and training of early mobilization for patients with mechanical ventilation is the only choice. (1) Determine the train crowd: There is no family member accompanying the patient in the ICU, but the family member must agree to the early mobilization, emphasizing that both the patient and the doctor are the subjects in the early mobilization. (2) Expand the scope of education: the scope of early mobilization training should not be limited to the ICU, should include the general ward, community, to fully understand the concept of rapid rehabilitation, the implementation of early activities has a positive effect. (3) Strengthen training content: medical staffs learn the starting time, indications, contraindications, development mode, activity specification and emergency treatment of early mobilization of ICU patients with mechanical ventilation. Patients and family members should know the purpose of the activity, the specific method of early mobilization, matters needing attention, specific cooperation, etc. (4) Improve the training method: first, the explanation was made through teaching video, and then the activity mode and other contents were explained and taught by the members of the early mobilization team. Finally, specific difficulties of patients and their families were collected for centralized discussion and solution.

3.2 Establish a mechanical ventilation early mobilization management team

3.2.1 Establish an early mobilization management team for patients with mechanical ventilation

Special personnel are responsible for the implementation of early mobilization, and the construction of early mobilization management team is more conducive to the implementation of the activity plan. Early mobilization management team should by clinicians, rehabilitation therapists, nurses, respiratory therapists, nurses (37). The author believes that because there is no patient's family to accompany the ICU, the workload of medical staff is large, so they cannot fully assist the patient in early mobilization. Therefore, when the patient is in a good condition, it is feasible to ask the patient's family members to assist in the early initiative, so the family members should also become members of the early mobilization management team.

3.2.2 Division of responsibilities of the early mobilization management team

After the patient is admitted to the ICU, the clinician should first make a diagnosis and treatment plan according to the patient's situation, and the rehabilitation therapist should assess the risk of limb swelling, deep vein thrombosis of lower limbs, shoulder and neck pain, foot ptosis and limb spasm. Based on the clinical physician's diagnosis, treatment plan and the nursing difficulties, the daily or weekly activity plan should be made together. Rehabilitation therapists are responsible for pre-activity evaluation, activity program formulation, and guiding responsible nurses to correctly implement early activities. The nurse is responsible for implementing the daily plan, monitoring the patient's activities, and timely feedback to the rehabilitation therapist about the specific difficulties of the patient's activities. Family members give psychological support to patients and help them to carry out activities (38). The whole activity requires nurses to monitor the whole process to ensure the safety of patients, to avoid accidents (39).

3.3 Develop standardized programs for early mobilization of patients with mechanical ventilation

The early mobilization regimen for ICU patients with mechanical ventilation should include daily wake-up, respiratory test, pain assessment, sleep management, mental assessment, etc. (40,41). (1) Daily wake up before the activity: ICU mechanical ventilation patients stop infusion of sedative drugs at 9:00 every day to achieve the goal of wake up, ask them to perform single command actions such as shaking hands, nodding, blinking, etc. The patients with poor consciousness recovery were judged by whether their eyes were open after stimulation, whether their movements were sensitive and whether their voluntary activities increased. (2) Assessment of activity risk: according to the patient's condition, the following should be evaluated before the activity: the possible risk of the patient, the probability of the risk, the degree of risk injury, whether the risk can be dealt with and other issues, to determine whether the patient is suitable for the activity (6). (3) Activity planning: Liu Hongmei once used the red dot of activity ability to indicate the activity ability of patients (42). Wang Qin used AMI-risk to evaluate the activity ability of patients, and selected activity intensity, mode, type, etc. (43). The quantitative index is more accurate for the development of activity plan (44). (4) Whole-process monitoring in the activity process: in the early mobilization process, immediate heart rate (HR), respiration (RR), percutaneous oxygen saturation (SpO2), blood pressure (BP) and other indicators should be observed, and subjective feelings of patients should be listened to, and patients should be timely asked whether they have dizziness, fatigue, pain and other discomfort (45). (5) Gradually improve activity intensity: first, assist the patient in passive joint exercise, and then encourage lower limb elevation, upper limb lift, fist clenching and other active activities, and then assist the patient to sit on the edge of the bed, and finally transition to lower bed activity (46), gradually improve the activity level. (6) Adjust the activity plan in a timely manner: according to the problems in the process of patient

activities to adjust the activity plan, simplify the activity process.

4. Summary

Mechanical ventilation is the main method of ICU for the treatment of critically ill patients, which is easy to cause complications such as ICUAW and delirium. Early mobilization can help patients improve ventilation function, shorten mechanical ventilation time, reduce the incidence of ICUAW and delirium. However, due to the lack of understanding of early mobilization of patients with mechanical ventilation, the implementation of early mobilization resources and equipment, as well as the standardization of early mobilization safety practice guidelines, the implementation rate of mobilization of patients with mechanical ventilation in ICU in China is relatively low. Therefore, this article summarizes the causes of the early activities implementation difficulties both at home and abroad, put forward to strengthen personnel training, set up professional management team, the early activities make standardization activity plan, so as to provide a certain basis for early campaigns, on this basis, emergency measures for safety incidents should be formulated, so as to expand the implementation rate of early activities of patients with mechanical ventilation and make them the beneficiaries of early activities

Declarations

1) **Consent to publication**
We declare that all authors agreed to publish the manuscript at this journal based on the signed Copyright Transfer Agreement and followed publication ethics.

2) ***Ethical approval and consent to participants***
Not applicable.

3) ***Disclosure of conflict of interests***
We declare that no conflict of interest exists.

4) ***Funding***
None

5) ***Availability of data and material***
We declare that the data supporting the results reports in the article are available in the published article.

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None.

7) ***Authors 'contribution***
Authors contributed to this paper with the design (RT and LX), literature search (RT), revision (RT and LX), editing (RT and LX) and final approval (RT).

8) ***Authors' biography***
None

References

1. Yu Sen Yang. Clinical practice of mechanical ventilation [G]. Beijing: people's military medical press, 2008.
2. Slutsky A S. History of Mechanical Ventilation. From Vesalius to Ventilator-induced Lung Injury [J]. American Journal of Respiratory and Critical Care Medicine, 2015, 191(10): 1106-1115.
3. Zhang Min, Lu Qian, Zhang Hai Yan. Application and characteristic analysis of objective pain assessment tool in adult mechanical ventilation patients in ICU [J]. Nursing research, 2018(11): 1675-1679.
4. Liu Jing Tao, Ma Peng lin. Sedation and analgesia in ICU patients with mechanical ventilation: guidelines vs. reality [J]. Chinese journal of critical care medicine (online edition), 2017(04): 241-244.
5. De Jonghe B, Lacherade J, Sharshar T, et al. Intensive care unit-acquired weakness: Risk factors and prevention [J]. Critical Care Medicine, 2009, 37: S309-S315.
6. Schreiber A, Bertoni M, Goligher E C. Avoiding Respiratory and Peripheral Muscle Injury During Mechanical Ventilation [J]. Critical Care Clinics, 2018, 34(3): 357-381.
7. Hunter A, Johnson L, Coustasse A. Reduction of Intensive Care Unit Length of Stay [J]. The

Health Care Manager, 2014, 33(2): 128-135.
8. Bakhru R N, Mcwilliams D J, Wiebe D J, et al. Intensive Care Unit Structure Variation and Implications for Early Mobilization Practices. An International Survey[J]. Annals of the American Thoracic Society, 2016, 13(9): 1527-1537.
9. Yue Meng, Yao Pei Yu, Cui Chu Yun, et al. Systematic evaluation of early activity effect in patients with mechanical ventilation [J]. Chinese journal of nursing, 2016(05): 551-557.
10. Grass F, Pache B, Martin D, et al. Feasibility of early postoperative mobilisation after colorectal surgery: A retrospective cohort study[J]. International Journal of Surgery, 2018, 56: 161-166.
11. Schmidt G A, Girard T D, Kress J P, et al. Official Executive Summary of an American Thoracic Society/American College of Chest Physicians Clinical Practice Guideline: Liberation from Mechanical Ventilation in Critically Ill Adults[J]. Am J Respir Crit Care Med, 2017, 195(1): 115-119.
12. Conceição T M A D, Gonzáles A I, Figueiredo F C X S, et al. Safety criteria to start early mobilization in intensive care units. Systematic review[J]. Revista Brasileira de Terapia Intensiva, 2017, 29(4).
13. Nydahl P, Sricharoenchai T, Chandra S, et al. Safety of Patient Mobilization and Rehabilitation in the Intensive Care Unit. Systematic Review with Meta-Analysis[J]. Annals of the American Thoracic Society, 2017, 14(5): 766-777.
14. Bounds M, Kram S, Speroni K G, et al. Effect of ABCDE Bundle Implementation on Prevalence of Delirium in Intensive Care Unit Patients[J]. American Journal of Critical Care, 2016, 25(6): 535-544.
15. Early mobilization and recovery in mechanically ventilated patients in the ICU: a bi-national, multi-centre, prospective cohort study[J]. Critical Care, 2015, 19(1): 81.
16. Sibilla A, Nydahl P, Greco N, et al. Mobilization of Mechanically Ventilated Patients in Switzerland[J]. Journal of Intensive Care Medicine, 2017: 270704176.
17. de Queiroz R S, Saquetto M B, Martinez B P, et al. Evaluation of the description of active mobilisation protocols for mechanically ventilated patients in the intensive care unit: A systematic review of randomized controlled trials[J]. Heart & Lung, 2018, 47(3): 253-260.
18. Hruska P. Early Mobilization of Mechanically Ventilated Patients[J]. Critical Care Nursing Clinics of North America, 2016, 28(4): 413-424.
19. Liu K, Ogura T, Takahashi K, et al. The safety of a novel early mobilization protocol conducted by ICU physicians: a prospective observational study[J]. Journal of Intensive Care, 2018, 6(1).
20. Bailey P, Thomsen G E, Spuhler V J, et al. Early activity is feasible and safe in respiratory failure patients*[J]. Critical Care Medicine, 2007, 35(1): 139-145.
21. Hashem M D, Nelliot A, Needham D M. Early Mobilization and Rehabilitation in the ICU: Moving Back to the Future[J]. Respiratory Care, 2016, 61(7): 971-979.
22. Nydahl P, Ruhl A P, Bartoszek G, et al. Early Mobilization of Mechanically Ventilated Patients[J].Critical Care Medicine, 2014, 42(5): 1178-1186
23. Jie Yang, Rong Yang. Advances in research on the safety of early activity and its prognostic effects of mechanical ventilation patients [J]. Nursing research, 2015 (13): 1537-1539.
24. Early mobilization in the critical care unit：A review of aduit and pediatric literature [J].
25. Eggmann S, Verra M L, Luder G, et al. Effects of early, combined endurance and resistance training in mechanically ventilated, critically ill patients: a study protocol for a randomised controlled trial[J]. Trials, 2016,

17(1).
26. Roberson A R, Starkweather A, Grossman C, et al. Influence of muscle strength on early mobility in critically ill adult patients: Systematic literature review[J]. Heart & Lung, 2018, 47(1): 1-9.
27. Shehabi Y, Bellomo R, Kadiman S, et al. Sedation Intensity in the First 48 Hours of Mechanical Ventilation and 180-Day Mortality[J]. Critical Care Medicine, 2018, 46(6): 850-859.
28. Johnson K, Petti J, Olson A, et al. Identifying barriers to early mobilisation among mechanically ventilated patients in a trauma intensive care unit[J]. Intensive and Critical Care Nursing, 2017, 42: 51-54.
29. Wright S E, Thomas K, Watson G, et al. Intensive versus standard physical rehabilitation therapy in the critically ill (EPICC): a multicentre, parallel-group, randomised controlled trial[J]. Thorax, 2018, 73(3): 213-221.
30. Schaller S J, Anstey M, Blobner M, et al. Early, goal-directed mobilisation in the surgical intensive care unit: a randomised controlled trial[J]. Lancet, 2016, 388(10052): 1377-1388.
31. Tian Keping, Yu Xiao, Zhang Xiaohong, et al. Investigation of ICU medical staff's awareness, attitude and clinical practice of early activities of patients with mechanical ventilation [J]. China Nursing Management, 2017 (09): 1204-1208.24 (4): 34-39.
32. Curtis L, Irwin J. Ambulation of patients who are mechanically ventilated: nurses'views[J]. 2017, 24(4): 34-39.
33. Charlie Ling, Zhou Song, Wang Jianning. ICU Nurses'Investigation on Patients' Early Activity Cognition and Behavior [J]. Chinese Journal of Nursing, 2018 (02): 221-225.
34. Ji Mengting, Xu Yan. Adverse effects of limitation of activity in mechanical ventilation ICU patients and research progress of early active exercise [J]. Modern clinical nursing, 2017 (04): 68-73.
35. Gosselink R, Bott J, Johnson M, et al. Physiotherapy for adult patients with critical illness: recommendations of the European Respiratory Society and European Society of Intensive Care Medicine Task Force on Physiotherapy for Critically Ill Patients[J]. Intensive Care Medicine, 2008, 34(7): 1188-1199.
36. Yang Liping, Zhang Zhigang, Zhang Caiyun, et al. Meta-analysis of early activity effect of mechanical ventilation patients [J]. China Nursing Management, 2017 (06): 758-764.
37. Dammeyer J, Dickinson S, Packard D, et al. Building a Protocol to Guide Mobility in the ICU [J]. Ctitical Care Nursing Quarterly, 2013, 36 (1): 37-49.
38. Rukstele C D, Gagnon M. Making Strides in Preventing ICU-Acquired Weakness [J]. Crticall Care Nursing Quarterly, 2013, 36 (1): 141-147.
39. Pawlik A J. Early Mobilization in the Management of Critical Illness [J]. Critical Care Nursing Clinics of North America, 2012, 24 (3): 481-490.
40. Engel H J, Needham D M, Morris P E, et al. ICU Early Mobilization [J]. Critcal Care Medicine, 2013, 41: S69-S80.
41. Wu Chuan Qin. Construction and Empirical Study of non-drug cluster intervention and prevention strategy for delirium in ICU [D]. Nanjing University of Traditional Chinese Medicine, 2018.
42. Liu Hong Mei, Zhou Jun Xia. Application of activity red dot indicator system in fall risk management of patients with early hepatic encephalopathy [J]. Liver, 2016 (07): 609-611.
43. Wang Qin, Tian Jin Ping, Sun Guo Zhen, et al. Use the AMI-RISK score to guide early activity in patients with acute myocardial infarction [J]. Journal of Nursing, 2016 (23): 12-14.
44. Johnson A M, Henning A N, Morris P E, et al.

Timing and Amount of Physical Therapy Treatment are associated with Lengh of Stay in the Cardiothoracic ICU [J]. Scienfic Reports, 2017, 7 (1).

45. Fang Xiuhua, Wu Lixin, Su Yan, et al. Feasibility study on early activity of ICU severe patients [J]. Chinese General Medicine, 2017 (07): 1259-1262.
46. He Wujing, Huang Yulian, Li Yanfang, et al. The effect of graded rehabilitation training on muscle weakness and pressure sores in patients with mechanical ventilation in ICU [J]. Nursing practice and research, 2018 (05): 155-157.