

000017 - Neurally adjusted ventilatory assist versus pressure support ventilation in patients weaning from mechanical ventilation

L. Liu (1) ; X. Xiaoting (2) ; H. Qiu (3)

(1) Department of critical care medicine, Zhongda Hospital, Southeast University, Nanjing, China; (2) Department of critical care medicine, No.87 Dingjiaqiao Street, Gulou District, Nanjing, China; (3) Critical care unit, Zhongda Hospital, Nanjing, China

Introduction

Difficult weaning is a common problem of patients and result in prolonged weaning duration and poor outcome. Neurally adjusted ventilatory assist (NAVA) is a partial support ventilatory mode which triggers and tailors the level of assistance delivered by the ventilator to the electrical activity of the diaphragm.

Objectives

The present study was designed to compare NAVA and PSV on weaning outcome in difficult-to-wean patients. The primary outcomes is to determine the difference in duration of weaning between NAVA and PSV. We hypothesize that in patients with difficult weaning NAVA reduces duration of weaning compared to PSV.

Methods

A total of 99 difficult-to-wean patients who were able to sustained PSV in the critical care medicine unit (ICU) of the Zhongda Hospital, Southeast University were enrolled in the study. Patients were classified according to the reason for weaning failure and were randomly assigned to receive NAVA or PSV during weaning. The primary outcome was the duration of weaning, which was defined as time from study enrollment to extubation or disconnection of the ventilator continuously for 12 hours or more in patients tracheotomized. Secondary outcomes included the proportion of successful weaning, ventilation free days within 28 days after enrollment, patient-ventilator asynchrony, length of stay in ICU and hospital, ICU and hospital mortality.

Results

There were 17% (8/47) and 33% (17/52) patients in the PSV and in the NAVA group never weaned from mechanical ventilation ($P = 0.073$). The duration of weaning was significantly shorter in the NAVA group [2.4 (1.1-5.3) days], than in that in the PSV group [4.1(1.1-7.7) days] ($P = 0.041$). The proportion of patients with successful weaning was 70% (n=33/47) in NAVA group which was much higher than that in PSV group (48%, n=25/52) (RR for NAVA, 1.74 [95 % CI, 1.04–2.91], $P = 0.040$). Compared with PSV, NAVA improved the rate of successful weaning in patients with single reason (74% vs. 49%, $P = 0.019$) but not in patients with multiple reasons for difficult weaning (50% vs. 45%, $P = 0.656$). NAVA decreased ineffective efforts and improved the trigger and cycling-off delays when compared with PSV. The number of invasive ventilator-free days [25 (20-27) vs. 21 (0-26), $P = 0.002$] and ventilator-free days [24 (20-26) vs. 21 (0-26), $P = 0.002$] were lower in the NAVA group on day 28. Mortality and length of stay in ICU and in hospital, were similar in the two groups.

Conclusion

In patients who were difficult to wean, NAVA decreased duration of weaning and increased the probability of successful weaning. NAVA which improved patient-ventilator asynchrony, is safe, feasible and effective over a prolonged period of time during weaning.

000085 - Correlation between muscle specific micro RNA in plasma and diaphragmatic dysfunction in patients undergoing mechanical ventilation

X. Xiaoting (1) ; L. Ling (1)

(1) Department of critical care medicine, No.87 Dingjiaqiao Street, Gulou District, Nanjing, China

Introduction

Mechanical ventilation can cause diaphragm dysfunction. It is important to explore possible predictors of VIDD in MV patients , and to take a practical and feasible method to prevent and treat them.

Objectives

To investigate the effect of MV on diaphragmatic function in patients undergoing cardiothoracic surgery and figure out the relationship between plasma miRNA and diaphragmatic function in mechanical ventilation patients.

Methods

1. Patient inclusion: patients admitted to Department of Critical Care Medicine, Zhongda Hospital from June to December 2017, aged between 18 and 75 years old, underwent elective cardiac surgery. Peripheral blood sample were collected on the 1 day before operation, before the extubation and the third days after operation, respectively. 2, Bedside ultrasound and NAVA evaluation of diaphragm function. 3, Bedside ultrasound assessed the thickness of skeletal muscle of four limbs. 4. Plasma miRNA test: fluorescence quantitative PCR was used to detect the circulating threshold of muscle tissue specific miRNA in plasma.

Results

1. A total of 40 patients were analyzed. Average APACHE II score was 13.9 ± 5.2 , total MV time was 26.1 ± 2.3 h. 2. Effect of MV on diaphragm function: diaphragmatic activity and thickening fraction decreased significantly before extubation and the third days after the operation compared with 1 day before operation ($P < 0.05$), but there were no difference between before extubation and the third days after the operation, while diaphragm thickening fraction improved on the third days after the operation. Thickness of diaphragmatic muscle was significantly higher than the other time points ($P < 0.05$), but there was no difference between 1 days before operation and third days after operation ($P > 0.05$). Before extubation, NVE was 62.2 ± 22.5 ml/Edi and NME was 1.9 ± 0.9 cmH₂O/Edi. 4. Effect of MV on thickness of skeletal muscle of

extremities: there was no significant change in the thickness of biceps brachii and the thickness of the four head rectus femoris ($P>0.05$) at 3 time points in the perioperative period. 5. Effect of MV on plasma MyomiR: level of plasma miR-1 and miR-206 in patients after cardiac surgery was significantly lower before extubation than 1 days before operation and third days after operation (3.6 ± 3.7 vs. 5.4 ± 4.1 vs. 6.0 ± 3.8 , $P=0.037$; 4.8 ± 2.8 vs. 8 ± 4 vs. 7.2 ± 4.2 , $P=0.001$), but there was no obvious change between 1 day before operation and third days after operation. The other 5 miRNA levels did not change significantly during the perioperative period ($P>0.05$). 6. Correlation of MyomiR and diaphragm function: Ratio of miR-206 and diaphragm thickening fraction on before extubation and third days after preoperative have correlation ($r_{\text{left}} = 0.427$, $P_{\text{left}} = 0.042$; $r_{\text{right}} = 0.640$, $P_{\text{right}} = 0.000$). There was no significant correlation between the other 6 MyomiR and diaphragm function indexes ($P>0.05$).

Conclusion

Short time mechanical ventilation can lead to the decrease of diaphragmatic function in patients with cardiac surgery, and the expression level of miR-1 and miR-206 also decreases, but it is still not recovered to the preoperative level on the third day after operation. The decrease of plasma miR-206 level is positively correlated with the decrease of diaphragm function in mechanically ventilated patients.

000185 - Interaction effects between targeted temperature management and hypertension on survival outcomes after out-of-hospital cardiac arrest: A national observational study from 2009 to 2016

R. Hyunho (1) ; K. Hyunlee (2)

(1) jebongro 42, Gwangju, Republic of Korea; (2) Kidney department, jebongro 42, Gwangju, Republic of Korea

Introduction

Targeted temperature management (TTM) has been used to improve neurological recovery in comatose patients after out-of-hospital cardiac arrest (OHCA). Hypertension is represented to a risk of OHCA, but, not well known whether affect neurological prognosis. This study aimed to investigate the effect of the TTM on neurological recovery after OHCA patients with or without hypertension.

Objectives

This study aimed to investigate the effect of the TTM on neurological recovery after OHCA patients with or without hypertension.

Methods

This study was conducted with the use of the national cardiac arrest registry of OHCA patients with presumed cardiac etiology who survived till emergency department (ED) admission between 2009 and 2016. The primary exposure was TTM. The endpoint was cerebral performance category (CPC) 1 and 2 at discharge. We compared outcomes between the TTM and non-TTM groups using multivariable logistic regression with an interaction term between TTM and hypertension for calculating adjusted odd ratios (AORs) and 95% confidence intervals (CIs) after adjusting for potential confounders.

Results

Among 25,985 patients following OHCA that survived till hospital admission with presumed cardiac etiology, TTM was performed on 12.2%. The TTM group showed better outcomes than the non-TTM group: 28.1% vs. 15.5% for good neurologic recovery ($P < 0.01$). The AOR of TTM for good neurological recovery for all study groups was 1.65 (1.47-1.85). In interaction model, the AOR of TTM for good

neurological recovery was 1.87 (1.26-2.76) in patients without hypertension vs. 0.87 (0.75-1.02) in patients with hypertension

Conclusion

Hypertension modified the effect of TTM on neurological outcomes for OHCA patients. TTM is associated with good neurological recovery in patients without hypertension, but not in patients with hypertension.