DOI: https://doi.org/10.53350/pjmhs2115112932

ORIGINAL ARTICLE

Pressure Support Versus T-Piece Trial for Weaning from Mechanical Ventilation

KHAYYAM FARID[1], IMRAN UL HAQ[2], AQSA SALEEMA[3], AMBAREEN SIFATULLAH[4], FAZAL WFDOOD [5], RIDHA RAFIQ[6], NADEEM MUNIR[7]

[1]*Training Medical Officer, Anaesthesiology, Khyber Teaching Hospital, Peshawar*
[2]*Assistant Professor Anaesthesia / Surgical ICU, Khyber teaching Hospital, Peshawar*
[3]*Medical Officer, Surgical ICU, Khyber Teaching Hospital, Peshawar*
[4]*Training Medical Officer, Anaesthesiology, Khyber Teaching Hospital Peshawar*
[5]*Assistant professor Anaesthesia, khyber teaching Hospital, Peshawar*
[6]*PGR Anesthesia Department, JPMC, Karachi*
[7]*Head of Anesthesia Department, JPMC, Karachi*
Correspondence to Dr. Khayyam Farid, Email: drmuhammadfarooqmalik@gmail.com

ABSTRACT

Aim: To compare pressure support versus T-piece trial for weaning from mechanical ventilation
Methodology: Randomized clinical trial in Surgical ICU, Khyber Teaching hospital Peshawar. 48 patients who had been mechanically ventilated for at least 24 hours and were deemed suitable for weaning took part in the study. SBT with pressure support ventilation of 8cm of H_2O was performed on one group of patients for two hours while the other group received a 30-minute SBT with pressure support ventilation. It was successful when extubation process is completed, (being able to go 72 hours without mechanical ventilation after the first SBT).
Results: Extubation was successful in 83.3% who received pressure support ventilation and in 75% who employed a T-piece. The patients who required reintubation were 12% with support pressure and 16.7% with T piece ventilation. Mortality rate in support pressure group is 16.7% while 25% in T piece ventilation group.
Conclusion: Pressure support ventilation for 30 minutes had a much higher success rate when it came to extubation. For spontaneous breathing trials, a shorter, less taxing ventilation approach should be used rather than the traditional one.
Keywords: Extubation, Support pressure, T piece

INTRODUCTION

T-piece ventilation and pressure support ventilation (PSV) were mostly used SBT modalities[1]. The rates of extubation are equal with two hour PSV and two hour T-piece ventilation[2].

Despite the fact that shorter SBTs are more comfortable, there is no evidence to suggest that shorter SBTs result in a higher rate of successful extubation. Some patients who had failed to extubate after a T-piece SBT may have been able to effectively extubate after a PSV, suggesting that a PSV may have been beneficial[3].

The objective of the study was to compare pressure support versus T-piece trial for weaning from mechanical ventilation.

METHODOLOGY

A multicenter randomized clinical study from January 2018 to April 2020. The trial was authorized by the ethical committee of each participating hospital. Patients who were 18 years of age or older and who had been on a mechanical ventilator for at least 24 hours were selected. Subjects with low demand SBT underwent a 30-minute SBT with an 8-cm H2O PSV and no positive end-expiratory pressure. Subjects with successful SBT were taken out of the induced coma. Dyspnea should be recorded using the dyspnea scale at the beginning and end of the procedure. Subjects with SBT unable to tolerate the treatment should be put on a ventilator for survival. In the first 72 hours after extubation, following symptoms show respiratory failure: respiratory acidosis, oxygen saturation <90% with a FiO_2 >0.5, respiratory rate > 35 /min, low level of consciousness and maximum fraction of inspired oxygen (FiO_2).

RESULTS

Table 1: Extubation

Extubation	Yes	No	Total
Pressure support successful	20(83.3%)	4(16.7%)	24(100%)
T piece Successful	18(75%)	6(25%)	24(100%)

Table 2: Re intubation

RE intubation	Yes	No	Total
Pressure support	3(12.5%)	21(87.5%)	24(100%)
T piece	4(16.7%)	20(83.3%)	24(100%)

Table 3: Mortality rate

Mortality Rate	Yes	No	Total
Pressure support	4(16.7%)	20(83.3%)	24(100%)
T piece	06(25%)	18(75%)	24(100%)

Table 4: Chi square test

	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Chi-Square	26.81[a]	1	.000	.000	.000
Continuity Correction[b]	22.47	1	.000		
Likelihood Ratio	23.45	1	.000		
Fisher's Exact Test					
Linear-by-Linear Association	26.25	1	.000		
N of Valid Cases	48				

a.1 cells (25%) have expected count < 5. The minimum expected count is 2.08, b. Computed only for a 2x2 table

DISCUSSION

In our study, 30-minute PSV boosted the rate of effective extubation when compared to the 2-hour T-piece. A greater number of patients were extubated as a result of the PSV, which shows that less demanding SBT allows ill patients to show ability to breathe more efficiently. One study showed that breathing with T piece requires the same effort as breathing after extubation, and it is recommended that SBTs with T pieces simulate the physiologic conditions following extubation[4]. Matic et al[5] demonstrated a higher rate of successful extubation with a PSV

Received on 11-05-2021
Accepted on 17-10-2021

than with a T piece (80% vs 73%) in a single-center trial, a finding consistent with the current study.

CONCLUSION

Extubation rates were considerably higher in mechanically ventilated patients when the SBT included 30 minutes of PSV compared to 2 hours of T-piece ventilation, showing that a shorter SBT was more successful.

Conflict of interest: Nil

REFERENCES

1. Ely EW, Baker AM, Dunagan DP, et al. Effect on the duration of mechanical ventilation of patients capable of breathing spontaneously. N Engl J Med. 1996;335(25):1864-69.
2. Esteban A, Anzueto A, Frutos F, et al. Characteristics and outcomes in adult patients receiving mechanical ventilation: a 28-day international study.JAMA. 2002;287(3):345-55.
3. Perren A, Domenighetti G, Mauri S et al. Protocol-directed weaning from mechanical ventilation: clinical outcome in patients randomized for a 30-min or 120-min trial with PSV. Intensive Care Med. 2002;28(8):1058-63.
4. Ezingeard E, Diconne E, Guyomarc'h S, et al. Weaning from mechanical ventilation with pressure support in patients failing a T-tube trial of spontaneous breathing. Intensive Care Med. 2006; 32(1):165-169.
5. Matić I, Majerić KV. Comparison of pressure support and T-tube weaning from mechanical ventilation: randomized prospective study. Croat Med J. 2004;45(2):162-166.