

Dampak Neuromuscular Electrical Stimulation (NMES) pada pasien ICU dengan ventilator durasi penggunaan ventilator di ICU: sebuah kajian sistematis dan metaanalisis = Impact of neuromuscular electrical stimulation on duration of mechanical ventilation in ICU patients: a systematic review and meta-analysis

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Abstrak

Latar Belakang: Intensive care unit-acquired weakness (ICU-AW) adalah salah satu masalah yang dihadapi dalam manajemen pasien kritis karena dihubungkan dengan ventilasi mekanik berkepanjangan sehingga meningkatkan risiko komplikasi dan mortalitas selama di ICU. Mobilisasi dini seperti neuromuscular electrical stimulation (NMES) dilaporkan bermanfaat mengurangi durasi penggunaan ventilator di ICU. Telaah sistematis dan meta-analisis ini dibuat untuk menyimpulkan dampak dari NMES terhadap durasi penggunaan ventilator di ICU. Tujuan: Mengetahui dampak spesifik penggunaan NMES terhadap durasi penggunaan ventilator pada pasien ICU. Metode: Studi eligibel hingga Januari 2022 terinklusi dalam studi. Pencarian literatur dilakukan melalui database jurnal berbasis elektronik yaitu Cochrane, EBSCOHost, Scopus, dan Pubmed dengan kata kunci spesifik dan operator boolean. Studi terinklusi dievaluasi untuk risiko bias dengan Cochrane RoB 2 dan estimasi besar efek dilakukan dengan fixed effect model menggunakan perangkat lunak Review Manager 5.4. Hasil: Pencarian literatur menghasilkan 9 studi yang terinklusi dalam meta-analisis. Dari penggabungan data, disimpulkan bahwa penggunaan NMES berhubungan dengan penurunan durasi penggunaan ventilator (MD -1.48; 95% CI: -2,54 – -0,41, $p = 0,007$, $I^2 = 30\%$, fixed-effect modelling). Kesimpulan: Penelitian ini menyimpulkan bahwa pemberian NMES dapat menurunkan durasi penggunaan ventilator di ICU.

.....Background: Intensive Care Unit-Acquired Weakness (ICU-AW) is one of the problems faced in critical medicine management, associated with prolonged mechanical ventilation (PMV) thereby increasing risk and mortality while in the ICU. Early mobilization such as neuromuscular electrical stimulation (NMES) has been reported to be beneficial in reducing the duration of mechanical ventilation in the ICU. This systematic review and meta-analysis was conducted to conclude the impact of NMES on the duration of mechanical ventilation in the ICU. Objective: To determine the impact of the use of NMES on duration of mechanical ventilation in ICU patients. Methods: Eligible studies up to January 2022 were included in the study. The literature search was carried out through electronic-based journal databases, namely Cochrane, EBSCOHost, Scopus, and Pubmed with specific keywords and boolean operators. The included studies were evaluated for risk of bias with Cochrane RoB 2 and estimation of effect size was performed using a fixed effect modelling using Review Manager 5.4 software. Results: The literature search yielded 9 studies that were included in the meta- analysis. From the pooled data, it was concluded that NMES administration was associated with a decrease in the duration of mechanical ventilation (MD -1.48; 95% CI: -2.54 – -0.41, $p = 0.007$, $I^2 = 30\%$, fixed-effect modeling). Conclusion: This study concluded that the administration of NMES reduces the duration of ventilator use in the ICU.