Neuromuscular electrostimulation

In a retrospective study, Li et al., of Daqing Oilfield General Hospital, Daqing and First Affiliated Hospital of Jiamusi University, China investigated the effect of neuromuscular Electrostimulation (NMES) in patients with postpartum low back pain (PPLBP).

They included 67 patients with PPLBP in this study. All patients received NMES, each session 30 minutes, 1 session weekly for a total of 4 weeks. The primary outcome was measured by the reduction in pain intensity, based on the visual analogue scale (VAS). The secondary outcomes included functional status, measured by the Roland Morris Disability Questionnaire (RMDQ), and quality of life, measured by the World Health Organization Quality of Life questionnaire (WHOQOL-BREF), as well as the adverse events related to the treatment. The outcome data were evaluated at baseline and at the end of 4-week treatment.

After 4-week treatment, NMES did not exert better outcomes in pain relief, measured by VAS, and functional status, measured by RMDQ compared with those before the treatment. In addition, no significant improvement in quality of life, measured by WHOQOL-BREF, compared to it before the treatment.The results of the study did not find that NMES is effective in patients with PPLBP after 4-week treatment [1)].

Neuromuscular Electrostimulation systems (NMES) for Venous thromboembolic prophylaxis may be beneficial for patients in whom pharmacological or standard mechanical prophylaxis methods are contraindicated or are regarded as unsafe or impractical. Although findings of experimental studies suggest that NMES reduce venous stasis, the clinical utility and effectiveness of NMES in VTE prevention remain controversial.

OBJECTIVES: To assess the effectiveness of neuromuscular Electrostimulation in the prevention of venous thromboembolism.

SEARCH METHODS: The Cochrane Vascular Group Information Specialist (CIS) searched the Specialised Register (22 March 2017) and the Cochrane Central Register of Controlled Studies (CENTRAL (2017, Issue 2)). The CIS also searched trial registries for details of ongoing and unpublished studies. The review authors searched the bibliographic lists of relevant articles and reviews to look further for potentially eligible trials.

SELECTION CRITERIA: We planned to include randomised controlled trials (RCTs) and quasi-randomised trials that compared any form of neuromuscular Electrostimulation as an intervention for VTE prophylaxis (alone or combined with pharmacological or other mechanical methods) versus no prophylaxis and other mechanical or pharmacological methods of VTE prophylaxis.

DATA COLLECTION AND ANALYSIS: At least two independent review authors were involved in study selection, data extraction, methodological quality assessment of included studies, and data analysis. We resolved disagreements by discussion between the two review authors. If no agreement could be reached, a third review author acted as an adjudicator. The main outcomes of the review were total deep vein thrombosis (DVT), symptomatic and asymptomatic DVT, pulmonary embolism (PE), total VTE and bleeding (major and minor). The quality of evidence was assessed using the GRADE approach and is indicated in italics.

MAIN RESULTS: We included in the review five randomised controlled trials and three quasi-randomised trials, enrolling a total of 904 participants. Among these, four studies included patients

undergoing major surgical procedures; one study included patients undergoing surgery for hip fracture under spinal anaesthesia; one study included trauma patients with a contraindication for prophylactic heparin; one study included neurosurgical patients who were operated on under general anaesthesia; and one study included patients with non-functional spinal cord injuries. Overall, eight studies investigated 22 treatment arms. Four studies compared the NMES arm with a no prophylaxis arm, and five studies compared the NMES arm with alternative methods of prophylaxis arms. Alternative methods of prophylaxis included low-dose heparin (5000 IU subcutaneously) - two studies, Dextran 40 - one study, graduated compression stockings (GCS) and intermittent pneumatic compression devices (IPCD) - one study. One study compared combined NMES and low-dose heparin versus no prophylaxis or low-dose heparin alone.We found no clear difference in risks of total DVT (odds ratio (OR) 1.01, 95% confidence interval (CI) 0.60 to 1.70, P = 0.98; 6 studies, 415 participants; low-quality evidence), asymptomatic DVT (OR 1.61, 95% CI 0.40 to 6.43, P = 0.50; 1 study, 89 participants; low-quality evidence), symptomatic DVT (OR 0.40, 95% CI 0.02 to 10.07, P = 0.58; 1 study, 89 participants; low-quality evidence), PE (OR 1.31, 95% CI 0.38 to 4.48, P = 0.67; 2 studies, 126 participants;low-quality evidence), and total VTE (OR 0.92, 95% CI 0.34 to 2.52, P = 0.88; 1 study, 72 participants; low-quality evidence) between prophylaxis with NMES and alternative methods of prophylaxis. None of the studies in this comparison reported bleeding.Compared with no prophylaxis, NMES showed lower risks of total DVT (OR 0.40, 95% CI 0.23 to 0.70, P = 0.02; 4 studies, 576 participants; moderate-quality evidence) and total VTE (OR 0.23, 95% CI 0.09 to 0.59, P = 0.002; 1 study, 77 participants; low-quality evidence). Data show no clear differences in risk of asymptomatic DVT (OR 0.32, 95% CI 0.06 to 1.62, P = 0.17; 1 study, 200 participants; low-quality evidence), symptomatic DVT (OR 0.06, 95% CI 0.00 to 1.36, P = 0.08; 1 study, 160 participants;low-quality evidence), or PE (OR 0.36, 95% CI 0.12 to 1.07, P = 0.07; 1 study, 77 participants; low-quality evidence) between prophylaxis with NMES and no prophylaxis. None of the studies in this comparison reported bleeding.In comparison with low-dose heparin, NMES was associated with higher risk of total DVT (OR 2.78, 95% CI 1.19 to 6.48, P = 0.02; 2 studies, 194 participants; low-quality evidence), but data were inadequate for other comparisons (NMES vs Dextran 40, NMES vs GCS, or NMES vs IPCD) and for other clinical outcomes such as symptomatic or asymptomatic DVT, PE, total VTE, and bleeding in individual comparisons.Overall, we judged the quality of available evidence to be low owing to high or unclear risk of bias and imprecise effect estimates due to small numbers of studies and events.

AUTHORS' CONCLUSIONS: Low-quality evidence shows no clear difference in the risk of DVT between NMES and alternative methods of prophylaxis but suggest that NMES may be associated with lower risk of DVT compared with no prophylaxis (moderate-quality evidence) and higher risk of DVT compared with low-dose heparin (low-quality evidence). The best available evidence about the effectiveness of NMES in the prevention of VTE is not adequately robust to allow definitive conclusions. Adequately powered high-quality randomised controlled trials are required to provide adequately robust evidence [2)].

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Li YP, Cui X, Liu SC, Zhang SH, Zhao YH. Neuromuscular Electrostimulation for treating postpartum low back pain. Medicine (Baltimore). 2018 Jul;97(28):e11426. doi: 10.1097/MD.0000000000011426. PubMed PMID: 29995793.
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Hajibandeh S, Hajibandeh S, Antoniou GA, Scurr JR, Torella F. Neuromuscular Electrostimulation for the prevention of venous thromboembolism. Cochrane Database Syst Rev. 2017 Nov 21;11:CD011764. doi: 10.1002/14651858.CD011764.pub2. Review. PubMed PMID: 29161465.