

Influence of positioning on vital parameter in patients with central-nervous lesions in the post-acute and chronic state – RCT

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Introduction

Positioning patients is part of the regular nursing routine in the care for severely disabled patients. Recently LiN-Lagerung in Neutralstellung (Positioning in Neutral [LiN]) turned out to have better effects on passive range of motion (PROM) and was perceived much more comfortable than conventional positioning (CON)[1]. While it is thought that positioning influences vital parameters, so far no study has investigated this for a clinically relevant observation period, and no study has compared different positioning concepts in this respect.

[1] Pickenbrock H, Ludwig VU, Zapf A, Dressler D: Conventional versus neutral positioning in central neurological disease—a multicentre randomized controlled trial. *Dtsch Arztebl Int* 2015;112:35–42.

Aims

We studied the effects on heart rate, breathing frequency and blood pressure as the secondary outcome parameters of above quoted study.

Methods

218 patients were randomly assigned to LiN or CON. For two hours, they were lying in one out of five positions (supine, 30° and 90° side lying on the right or left side) according to the respective positioning concept. Heart rate, breathing frequency and blood pressure were measured in a supine lying position (i.e., not positioned according to any concept) before and after positioning. It was investigated if the interventions influence vital parameters and whether there are differences between LiN and CON, or between the different positions.

Results

In average in neither of the groups did heart rate, breathing frequency and blood pressure change significantly after the intervention compared to before ($p \leq 0.01$). In addition, in 90° side lying on the right side in CON, the systolic blood pressure increased by more than 5 mmHg, and for 90° side lying on the left side in LiN, the systolic blood pressure decreased by more than 5 mmHg, which is considered a clinically relevant change. For patients with hypertension or hypotension this might be crucial and has to be considered when positioning a patient.

Conclusion

Positioning does not influence heart rate, breathing frequency and blood pressure when patients are lying for a clinically feasible length of 2 hours. This study shows that LiN should be used as it is superior to CON regarding PROM and comfort and does not show side effects. The different positions can be used according to the patients' preferences or to address problems like decubitus prevention.