Comparison Of Mean Systemic Pressure In Patients With Acute Circulatory Failure Receiving Passive Leg Raising vs. Pneumatic Leg Compression.

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Argomento: Basic Science Abstract

Background: Driving pressure of venous return (VR) is determined by mean systemic pressure (Pms) and central venous pressure (CVP). While passive leg raising (PLR) and pneumatic leg compression PC (PC) can increase VR, there is no study explore the effects of these two procedures on Pms and VR-related hemodynamic variables.

Methods: Forty patients with acute circulatory failure were included in this analysis. All patients were performed both PLR and PC, and were measured for Pms, CVP, mean arterial pressure (MAP), cardiac output (CO), VR resistance (RVR), and systemic vascular resistance (SVR) at baseline and immediately after procedures. To minimized carry-on effect, the patients were divided into 2 groups based on procedure sequence which were 1) the patients who received PLR first then PC (PLR-first), and 2) the patients who received PC first then PLR (PC-first). Both groups were waited for washing period before performed 2nd procedure. Primary outcome was difference in Pms between PLR and PC procedure. Secondary outcome were differences in CVP, MAP, CO, RVR, and SVR between PLR and PC procedure.

Results: There was no difference in baseline characteristics and no carry-on effect between 2 groups of patients. Compared to baseline, both PLR and PC significantly increased Pms, CVP, MAP, and CO. Compared to PC, PLR more increased Pms (9.0±2.3 vs 4.8±1.7 mmHg, p<0.001), CVP (4.5±1.2 vs. 1.6±0.7 mmHg, p<0.001), MAP (22.5±5.6 vs. 14.4±5.0 mmHg, p<0.001), and CO (1.5±0.5 vs. 0.5±0.2 L/min, p<0.001). PC, but not PLR also significantly increased RVR (16 ± 27.2 dyn.s/cm^5,

p=0.001) and SVR (78.4 ± 7.2 dyn.s/cm^5, p<0.001) .

Conclusions: In patients with acute circulatory failure, PLR more increased Pms, CVP, MAP, and CO than PC.

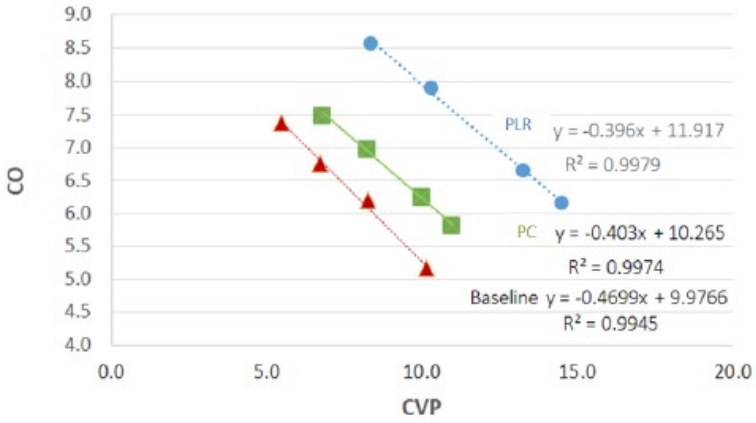

Figure 1. Venous return Guyton's curve generating from 4-inspiratory hold maneuver method.

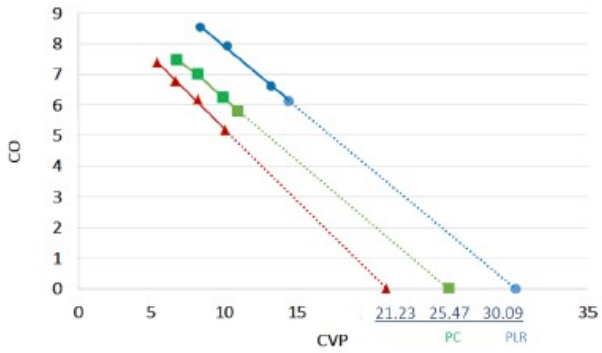

Figure 2. Guyton's VR curves and Pms in patients received PC and PLR.