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### **Introduction:**

The prediction of fluid responsiveness is required to avoid unnecessary volume expansion in patients with ARDS.

So the objective of our study was to assess whether hemodynamic changes during a short elevation of PEEP would predict fluid responsiveness in patients with ARDS.

### **Methods:**

This prospective observational study conducted from april 2018 to april 2020 enrolled 30 patients presenting a mild ARDS according the classification of Berlin. They were 60+-10 years old and were submitted to a protective ventilation with PEEP 8, with the use of « tidal volume challenge » to improve the reliability of pulse pressure variation (PPV)[1]. A PEEP challenge was performed in patients hemodynamically stable, and consisted of increasing PEEP progressively from 8 cmH<sub>2</sub>O to 12 cmH<sub>2</sub>O with a time of ten minutes to reach 12 cmH<sub>2</sub>O. We recorded continuously, systolic pressure variation (SPV), mean arterial pressure (MAP) and PPV from the arterial wave line. We measured also cardiac index (CI) with echocardiography. Central venous pressure (CVP), PPV, SPV, MAP, and CI, were evaluated at PEEP 8 and at PEEP 12.

### **Results:**

Statistical analysis was performed using student's t test. Results were expressed as mean +- std deviation. We observed finally that PEEP challenge from PEEP 8 (control) increases PPV, SPV, CVP and decreases MAP. MAP (mmHg) decreases from 70.23+-2.02 to 63.56+-2.01 (p<0.001). PPV (%) increases from 10.02+-1.24 to 17.65+-1.62 (p<0.001). SPV (%) increases from 9.42+-1.25 to 15.72+-1.7 (p<0.001). CVP (cmH<sub>2</sub>O) increases from 10.62+-1.14 to 14.23+-1.32 (p<0.003) and finally CI (l/mn/m<sup>2</sup>) decreases from 3.8+-0.3 to 2.5+-0.2. P<0.003

### **Conclusion:**

In patients with mild ARDS, PEEP challenge could detect fluid responsiveness. The absence of significant increase of PPV, during an elevation of PEEP might be used to identify the patients who are not responders.

### **References:**

1. D. De Backer et al. Pulse pressure variation to predict fluid responsiveness. Influence of tidal volume. Intensive Care Medicine 31, 2005.

### **Image :**

	Control (PEEP8)		PEEP challenge (PEEP12)		P
	Mean	SD	Mean	SD	
MAP mmHg	70.23	2.02	63.56	2.01	<0.001
CVP cmH <sub>2</sub> O	10.62	1.14	14.23	1.32	<0.003
PPV %	10.02	1.24	17.65	1.62	<0.001
SPV %	9.42	1.25	15.72	1.72	<0.001
CI L/mn/m <sup>2</sup>	3.8	0.3	2.5	0.2	<0.001

*Hemodynamic Parameters at PEEP 8 and at PEEP 12.*