

Category : **Cardiovascular: Monitoring**

**A35 - Co2 derived parameters from central venous blood sampling: correlation with severity and prognosis. a case series of 22 patients in a general icu.**

**A Casazza<sup>1</sup> ; P Cornara<sup>2</sup> ; E Bellazzi<sup>2</sup> ; F Bonomi<sup>2</sup> ; D Ciprandi<sup>2</sup> ; R Preda<sup>2</sup> ; R Vanzino<sup>2</sup> ; MP Storti<sup>2</sup>**

<sup>1</sup>ASST Pavia, Anaesthesia and Intensive Care Vigevano, Vigevano, Italy, <sup>2</sup>ASST Pavia, Anesthesia and Intensive Care Vigevano, Vigevano, Italy

### **Introduction:**

DpCO<sub>2</sub> (venous to arterial pCO<sub>2</sub> difference) is suggested to be a C.O. adequacy marker in patients affected by circulatory shock; is still debated, instead, if DpCO<sub>2</sub>/Ca-vO<sub>2</sub> (DpCO<sub>2</sub> to O<sub>2</sub> arterio-venous content difference ratio) is a RQ surrogate and a global anaerobic metabolism marker[1].

### **Methods:**

We calculated ΔpCO<sub>2</sub> and ΔpCO<sub>2</sub>/Ca-cvO<sub>2</sub> (ΔpCO<sub>2</sub> to arterio-central venous O<sub>2</sub> content difference ratio) at admission using data from arterial and central vein blood sampling and we analyzed relationship with SOFA score and arterial lactate level at admission, Catecholamine Index (C.I.) during ICU stay and ICU mortality. We used linear regression analysis and ROC curve to study relationship.

### **Results:**

ΔpCO<sub>2</sub> showed strong correlation with SOFA score (R<sup>2</sup> 0,59, p<0,0001) and C.I. (R<sup>2</sup> 0,63, p<0,0001) and was found to be an accurate test in predicting SOFA score > 6 (AUC 0,89, best cut-off value 8mmHg, sensitivity 77% and specificity 100%) and C.I. > 10 (AUC 0,89, best cut-off value 7mmHg, sensitivity 86% and specificity 87%). ΔpCO<sub>2</sub>/Ca-cvO<sub>2</sub> showed good correlation with SOFA score (R<sup>2</sup> 0,26 p<0,05) and with C.I. (R<sup>2</sup> 0,47 and p<0,05). The test had moderate accuracy in predicting SOFA score > 6 (AUC 0.80, best cut-off value of 1,95 mmHg/ml with sensitivity 69% and specificity 89%) and better accuracy in predicting lactate level > 2 mmol/l (AUC 0,82, best cut-off value of 1,75 mmHg/ml, sensitivity 100% and specificity 71,4%).

### **Conclusion:**

ΔpCO<sub>2</sub> is strongly related with circulatory impairment; ΔpCO<sub>2</sub>/Ca-cvO<sub>2</sub> can be considered, if not a RQ surrogate at all, a decoupling index between macro-circulation and O<sub>2</sub> extraction.

Both parameters are statistically significant higher in patients died in ICU.

In our series best cut-off values are higher than those suggested in previous study, probably due to the use of central rather than mixed venous blood sampling [2].

### **References:**

[1] Gavelli F et al. J Thorac Dis S11:1528-37, 2019

[2] Cavaliere F et al. Minerva Anestesiologica 85(12):1308-14, 2019