

POSTER PRESENTATION

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Use of transcutaneous capnography in critically ILL patients

G Morales Varas*, H Marin Mateos, S Chancón Alves, M Castillo Jaramillo, JA Sánchez-Izquierdo Riera, JC Montejo González

From ESICM LIVES 2015

Berlin, Germany. 3-7 October 2015

Introduction

Assess alveolar ventilation is a routine when patients are mechanically ventilated. Transdermal devices that measure CO₂ pressure (PtcCO₂) are can be used but should be evaluated in critically ill patients with altered tissue perfusion.

Objectives

To determine the usefulness of transcutaneous capnography in patients with mechanical ventilation.

Methods

A prospective-observational, single-center study was carried out in the medical-surgical intensive care unit (ICU) at university hospital. Population: All patients over 16 years old, who required respiratory support with invasive mechanical ventilation, the measurement of PtcCO₂ is done by SenTec Digital Monitor and their results were compared with samples of blood gas analysis (PaCO₂) in patients with different hemodynamic conditions. Study period: June 2014 to December 2014. Demographic and clinical data included reason for admission, body temperature, requirement of vasoactive drugs, neuromuscular blockers and maneuvers using for treat to the refractory hypoxemia such as prone position ventilation and veno-venous extracorporeal membrane oxygenation (ECMOv-v). Statistical analysis of the results was performed using SPSS software version 22. Quantitative variables were expressed as mean and SD. Qualitative variables were expressed as percentages. Agreement between PaCO₂ and PtcCO₂ was evaluated using lineal regression analysis.

Results

A total of 78 samples were analyzed. Mean age was 58 (SD 9.9) years, with an average stay in ICU of 24.8 (SD 13.3) days, the main reason for admission was respiratory distress syndrome (ARDS) with 42.3% of the patients, 24.3% of them were ventilated in prone position and 48.4% received support with ECMO v-v. Mean of PtcCO₂ vs PaCO₂ was 54.2 (SD 11.2) mmHg / 55.4 (SD 12.8) mmHg respectively. PtcCO₂ was highly correlated with PaCO₂ ($r = 0.79$; $p < 0.001$), as determined to by lineal regression analysis. 37.2% of the samples under support with vasoactive drugs did not affect PtcCO₂ accuracy ($r = 0.75$; $p < 0.001$) relative to the PaCO₂.

Conclusions

In our study, continuous monitoring of the trends of PtcCO₂ constitutes an useful method for assessing alveolar ventilation in critically ill mechanically ventilated even in situations of hemodynamic instability.

Published: 1 October 2015

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doi:10.1186/2197-425X-3-S1-A389

Cite this article as: Morales Varas et al.: Use of transcutaneous capnography in critically ILL patients. *Intensive Care Medicine Experimental* 2015 **3**(Suppl 1):A389.