

The determination of oxygen consumption in septic patients. A comparison between calculation by the Fick principle and indirect calorimetry.

In this prospective clinical study in 30 septic, mechanically ventilated patients oxygen consumption was parallelly determined by the Fick principle and by indirect calorimetry. As indirect calorimeter a metabolic monitor, synchronized with a conventional mechanical ventilator (7250 Metabolic Monitor, Fa. Nellcor Puritan-Bennett, CA) was used. The study revealed a mean difference of – 33 ml/min/m² between both methods, which is higher than the findings of other investigations with different techniques. Discrepancies between the two methods may be attributed to an increased pulmonary oxygen consumption and the use of a cold injectant for the determination of cardiac output by thermodilution. The current analysis did not allow the determination of the most accurate $\dot{V}O_2$ measurement, because none of the two methods is considered as „gold standard“.

The advantages of indirect calorimetry are it's better reproducibility and less variability. Furthermore the opportunity of continuous and non-invasive monitoring of oxygen consumption is an important advantage of indirect calorimetry, especially in patients with contraindications to right heart catheterization.

We conclude that indirect calorimetry may be a helpful tool in the monitoring of critically ill patients.