Abstract

Critically ill patients are characterized by an increased catabolic response, a hypermetabolic state, higher nutritional requirements and a decreased capacity for utilization of parenteral substrate. Measurement of energetic expenditure in critically ill patients is necessery to determine the optimal nutritional support which is individual for everyone patient with the view of contribute to recovery, to prevent possible complications of overfeeding or underfeeding and reduce the hospitalization period.

Energy expenditure was measured in two intervals by indirect calorimetry in 12 polytrauma patients (mean age 32 years ± 16 years) in the intensive care unit at FN HK. The hypermetabolic state of patients was evaluated from the ratio of REE/BEE (REE regarding basal energy expenditure calculated on the basis of the Harris-Benedict equation) and was also evaluated utilization of substrates.

Resting energy expenditure during the first examination was on average 2195 kcal/d ± 665,8 kcal/d, at the second examination of 2031 kcal/d ± 590,9 kcal/d. Between measurements was no statistically significant difference. Mean REE/BEE was 122,3 % ± 27,44 %, 118,5 % ± 23,15 %, respectively. Respiratory quotient has an average around 0,81, which indicates a preferential utilization of proteins. The large loss of protein also indicates a high amount of nitrogen waste in urine (26,3 g/d ± 14,41 g/d vs 24,69 g/d ± 20,79 g/d).

The study results show that the determination of REE in polytrauma patients is important for proper evaluation of nutritional requirements and should be part of care for critically ill patients.

Key words: critically ill patients, energy expenditure, indirect calorimetry, Harris-Benedict equation, substrate utilization, metabolism