ABSTRACT

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Title of Thesis **Utilisation of nutrinional substrates in mechanically ventilated critically ill patients**

Critically ill patients have significantly different metabolism compared to healthy individuals. Patients are experiencing hypometabolic phase which turns into hypermetabolic phase later on. It is desirable to supply patients with a nutrition that will reflect these metabolic changes and that will sufficiently cover the individual needs of each patient in order to decrease the risk of adverse effects and to improve the prognosis of the patient.

The goal of this clinical study was to compare the nutrition of critically ill mechanically ventilated patients from surgical ICU of Teaching Hospital in Hradec Králové with results obtained from the results of calorimetric examination. Balance between the nutritional support and the immediate energy needs of the patient allows us to evaluate the level of coverage of the nutritional needs within our group of patients.

In total 17 critically ill mechanically ventilated patients were examined. They were given nutrition according to the detailed nutritional protocol which was written following the current recommendations of international guidelines without prior calorimetric examination.

During ebb phase of trauma patients were given 3.6±1.5 g/kg/day of carbohydrates, 0.8±0.4 g/kg/day of lipids and 1.2±0.5 g/kg/day of proteins of which they utilized 2.5±2.0 g/kg/day of carbohydrates, 0.6±0.6 g/kg/day of lipids and 1.1±0.7 g/kg/day of proteins.

During flow phase of trauma patients were given 4.4±1.5 g/kg/day of carbohydrates, 1.1±0.5 g/kg/day of lipids and 1.6±0.5 g/kg/day of proteins of which they utilized 2.0±2.3 g/kg/day of carbohydrates, 1.1 ±0.6 g/kg/day of lipids and 2.7±1.3 g/kg/day of proteins.

The positive balance of carbohydrates in 18 out of 22 examinations probably relates to increased endogenous glucose production and the presence of hyperglycemia. The negative balance of lipids is observed in 11 out of 22 examinations. The negative balance of proteins occurs in 15 out of 22 examinations. It seems beneficial to consider higher protein administration especially in hypermetabolic flow phase of trauma where the negative balance is observed in 13 out of 15 patients.

Above mentioned results show that following predictive formulas or international guidelines does not guarantee an adequate nutritional support. So far the most accurate method for prescribing individual nutrition is indirect calorimetry.