



Impact of energy deficit calculated by a predictive method on outcome in medical patients requiring prolonged acute mechanical ventilation

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Résumé en anglais

To assess energy balance in very sick medical patients requiring prolonged acute mechanical ventilation and its possible impact on outcome, we conducted an observational study of the first 14 d of intensive care unit (ICU) stay in thirty-eight consecutive adult patients intubated at least 7 d. Exclusive enteral nutrition (EN) was started within 24 h of ICU admission and progressively increased, in absence of gastrointestinal intolerance, to the recommended energy of 125.5 kJ/kg per d. Calculated energy balance was defined as energy delivered – resting energy expenditure estimated by a predictive method based on static and dynamic biometric parameters. Mean energy balance was – 5439 (sem 222) kJ per d. EN was interrupted 23 % of the time and situations limiting feeding administration reached 64 % of survey time. ICU mortality was 72 %. Non-survivors had higher mean energy deficit than ICU survivors ($P = 0.004$). Multivariate analysis identified mean energy deficit as independently associated with ICU death ($P = 0.02$). Higher ICU mortality was observed with higher energy deficit ($P = 0.003$ comparing quartiles). Using receiver operating characteristic curve analysis, the best deficit threshold for predicting ICU mortality was 5021 kJ per d. Kaplan-Meier analysis showed that patients with mean energy deficit ≥ 5021 kJ per d had a higher ICU mortality rate than patients with lower mean energy deficit after the 14th ICU day ($P = 0.01$). The study suggests that large negative energy balance seems to be an independent determinant of ICU mortality in a very sick medical population requiring prolonged acute mechanical ventilation, especially when energy deficit exceeds 5021 kJ per d.

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