CRITICAL CARE

COMMENTARY

Do we need an assessment of the nutrition risk in the critically ill patient?

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See related research by Heyland *et al.*, http://ccforum.com/content/15/6/R268

Abstract

The description of a new score of nutrition risk in critically ill patients in the previous issue of *Critical Care* is very appropriate and timely. However, the use of this score will probably not help the clinician to improve the prescription of nutrition therapy, especially when major uncertainties are raised about the definition of adequate nutrition. The validation of the score will require the use of outcome variables susceptible to influence by nutrition, such as surrogate markers of muscle function. Meanwhile the educational value of a score of nutrition risk is undisputed in settings where the use of scores is incorporated into the usual practice.

This provocative question is raised by the attempt to identify patients who could benefit most from nutrition support [1]. This initiative is of great potential value, as the current scores used to assess the risk of development of malnutrition in hospitalised patients (for instance, nutritional risk screening [2]) do not take into account the severity of critical illness. Basically, although the work by Heyland and colleagues [1] applies Lord Kelvins' paradigm 'If you cannot measure it, you cannot improve it', it is still unlikely to answer daily clinicians' concerns, for several different reasons.

First, the appropriate amount of calories and protein is a matter of intense debate, since the recent release of the landmark EPaNIC trial [3]. In contrast to some expectations deducted from observational data linking the magnitude of the caloric debt, calculated as the difference between caloric intake and resting energy expenditure [4,5], to a higher number of complications, the EPaNIC trial demonstrated in the largest sample of critically patients ever enrolled in a nutritional study in critically ill patients that the provision of calories matching the resting energy expenditure was associated with a poorer outcome than when hypocaloric feeding was administered. These challenging findings are consistent with other recent and older observations of unaltered outcome by hypocaloric feeding [6-9]. Different findings were recently presented by Heidegger and colleagues [10]: in a highly selected subgroup of patients in whom the tolerance of enteral nutrition prevented the provision of more than 60% of the caloric target over 4 days (15% of the screened patients), supplemental parenteral nutrition infused at a rate tightly adapted to match the caloric goal was associated with a decrease in the rate of infection and in the time on ventilation.

From these recent and apparently contradictory findings, an operational definition of adequate nutrition therapy is uncertain. The current guidelines agree to recommend early enteral nutrition whenever possible in any patient unable to match a reasonable portion of his caloric needs, regardless of his current nutrition status. Where recommendations need to be updated is in the definition of the desirable timing to reach a predefined target, and the right place for parenteral nutrition when enteral feeding is contraindicated or poorly tolerated. The answers to these important questions could differ according to the nutritional status. For instance, the effects of caloric intake could differ in patients with different ranges of admission body mass index, as suggested by the retrospective observation of Alberda and colleagues [11]. Obviously a more accurate assessment of the magnitude of the nutrition risk by scores such as the Nutrition Risk in the Critically Ill (NUTRIC) score [1] will help to solve these issues.

The second issue raised by the publication of the article by Heyland and colleagues is even more challenging: which outcome variable will be accurate enough and specific enough to validate a nutritional risk score in the ICU? Short-term and long-term mortality and lengths of stays are easily available, but are likely to be confounded by several factors not directly related to nutritional status. Some objective measurements of the muscle

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function of the patients at hospital discharge (for example, 6-minute walking distance [12] or handgrip strength [13]) as well as subjective assessments of physical functioning could represent a more accurate index for the erosion of lean body mass. In any case, this key question should be solved in order to validate the score using a meaningful outcome variable. The inclusion of more nutrition-related indices in the model, such as the tolerance to enteral feeding, or the magnitude of the catabolic response (for example, insulin resistance, nitrogen balance) could enhance the specificity of a nutritional score, while the use of nonspecific severity scores (Acute Physiology and Chronic Health Evaluation II and Sequential Organ Failure Assessment) in the calculation of the NUTRIC score could decrease its potential predictive accuracy.

Third, the use of scores is quite popular in some countries but not in others, where these are considered irrelevant and mostly unable to improve the outcome of patients. Of course, the value of scores is quite high for characterising patients included in research protocols. In daily practice, the time spent collecting data manually should be justified by a benefit in terms of outcome, or resource utilisation.

Fourth, the educational value of a nutrition score is undisputed. Increasing the awareness of the healthcare providers towards the risk of acquisition of malnutrition is a major issue [14]. The best therapeutic option to prevent the loss of lean body mass, however, probably involves several components including nutrition therapy, shortening of sedation, or muscle paralysis and early physical rehabilitation. The severe anabolic resistance of critically ill patients [15], resulting in a very high susceptibility to complications, implies a multifaceted therapeutic approach, including adequate nutrition therapy once it has been redefined.

In summary, we might expect from the use of NUTRIC an increased awareness towards nutritional issues and the availability of a useful research tool.

Abbreviations

NUTRIC, Nutrition Risk in the Critically Ill.

Competing interests

The author declares that he has no competing interests.

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