

Provision of Nutrients: Introducing the Baby Stomach Concept



New advances in healthcare have changed our understanding of nutritional needs during critical illness. Till now, the concept of more is better prevailed and the use of high tidal volumes (10-12 ml/kg) was deemed appropriate in patients with ARDS. However, new findings contradict these beliefs.

Results of the Early versus Late Parenteral Nutrition in Critically Ill Adult (EPANIC) trial highlight the risk of the provision of excess calories during critical illness. In the EPANIC trial, patients received different categories of macronutrients (glucose, lipids and amino-acids) at both early or late parenteral nutrition. Further analysis suggested that amino-acids play a major role in the less favourable outcomes associated with early parenteral nutrition.

The detrimental effects of high amount of nitrogen are also supported by findings of fat infiltration and delayed recovery of weakness in patients who were randomised to the early parenteral nutrition arm of EPANIC. Study findings contradict the concept of a protective effect of high protein intake. Therefore, the optimal protein/nitrogen intake remains a controversy and can range from 0.8 to 2-2.5g proteins/kg.day.

Safety of high dose amino acids has been suggested by Doig et al. In this particular trial, the kidney function was not influenced by a daily dose of 100g of intravenous amino-acids as compared to standard care. On the other hand, Thiessen et al report the amplification of glucagon production by exogenous amino-acids and the amplification of hepatic catabolism of amino-acids by glucagon. Simply stated, amino-acids during the catabolic phase of critical illness could aggravate nitrogen catabolism. Therefore, future guidelines should keep this in mind and should differentiate between nitrogen intakes during the acute phase and the prolonged phase of critical illness.

Clinically speaking, the ability to build muscle proteins is elusive during the acute catabolic phase where the breakdown of protein exceeds its synthesis. During the late and recovery phases however, boosting muscle protein synthesis could be modulated by an individualised combination of proteins and physical activity.

Findings from Theissen et al illustrate how basic and clinical research can be combined to avoid mistakes on common sense beliefs that are based on observational trials. Findings support the concept of low nutrient requirements during the acute phase and support the concept of “baby stomach” analogy with the “baby lung” concept that was initially introduced by Gattinoni and Pesenti.

Source: [American Journal of Respiratory and Critical Care Medicine](#)

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