The importance of nutritional support in critically ill pediatric patients: a focus on refeeding syndrome

Won Kyoung Jhang
Division of Pediatric Critical Care Medicine, Department of Pediatrics, Asan Medical Center Children’s Hospital, University of Ulsan College of Medicine, Seoul, Korea

Normally, our body copes with a critical illness in a protective manner, aiming to minimize the insult by activating multiple immunological, metabolic, and hormonal responses. During this acute phase, energy delivery is primarily targeted to vital organs for lifesaving purposes. However, when adequate energy delivery and utilization are impaired, the body shifts into an intense catabolic state, which includes muscle breakdown, insulin resistance, stress hyperglycemia, and negative protein balance [1,2]. These significant metabolic disturbances can progress to a profound state of malnutrition if proper nutritional support is not initiated and provided in a timely manner [3,4].

Adequate nutritional support is a fundamental and critical component for the early recovery and improvement of clinical outcomes in critically ill pediatric patients. Despite its importance, it has often received relatively little attention and has been a low priority in intensive care settings. However, recommendations and guidelines developed over the past several decades have emphasized the importance of timely and appropriate nutritional support for these patients, achieving consensus among intensive care healthcare providers [2,5,6]. The primary goal is to minimize catabolism and muscle wasting through early enteral nutrition support. Conversely, it is also acknowledged that excessive delivery of energy and protein through overfeeding can have detrimental effects. There is a growing recognition of the importance of the rate of delivery and the gradual increase of energy and nutrients, which can be equally critical. Just as the shift to a catabolic state during the acute phase of critical illness can lead to significant metabolic disturbances, the transition from a catabolic to an anabolic state can also cause substantial metabolic disruptions. Sudden changes may result in various electrolyte imbalances, which, in turn, can lead to organ damage, including muscular-skeletal weakness, encephalopathy, and cardiorespiratory failure. In some cases, these imbalances can be fatal unless they are properly corrected with established supplementation.

In the intensive care setting, patients with underlying critical illnesses face numerous risks for undernutrition and malnutrition, which can be exacerbated by various therapeutic interventions and procedures. Despite its significance, this issue has often been overlooked. However, there is growing evidence and understanding of the acute metabolic disturbance known as refeeding syndrome, which can occur upon the reintroduction of nutrition after a period of prolonged fasting or a state of undernourishment [7]. In response to this issue, the American Society for Parenteral and Enteral Nutrition (ASPEN) developed consensus recommendations in 2020 for identifying patients at risk of refeeding syndrome, including undernourished children [8].
Kim [9] reviewed refeeding syndrome in critically ill children, focusing on its understanding, prevention, and management. It is important to increase awareness among intensive care healthcare providers about refeeding syndrome, which, although not rare, can sometimes lead to fatal outcomes if not recognized and managed appropriately [10]. The most important point is to remain vigilant about the possibility and risks of refeeding syndrome during the course of intensive care. Moreover, it should be emphasized that nutritional support is fundamental and critical in intensive care, alongside the support and management of specific vital organs, including hemodynamic and neurologic status.

CONFLICT OF INTEREST

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ORCID

Won Kyoung Jhang https://orcid.org/0000-0003-2309-0494

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