



EDITORIAL

Disease-related malnutrition: An aspect to consider[☆]

La malnutrición relacionada con la enfermedad: un aspecto a considerar

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When considering the pathogenesis and pathophysiology of malnutrition, it is useful to distinguish between malnutrition unrelated to organic disease, that is, malnutrition due to environmental factors (access to foods) or dietary habits, and malnutrition related to disease. In the first case, malnutrition mainly results from a decreased dietary intake, which generates an imbalance relative to nutritional requirements that may affect not only growth and development, but also other aspects of health. In case of disease-related malnutrition, however, malnutrition is preceded by a state of inflammation that contributes to the energy imbalance through various mechanisms: increased catabolism, decreased appetite, increased energy losses, etc. When intake is inadequate in such situations, malnutrition will worsen and will have a negative impact on clinical outcomes beyond its intrinsic detrimental effects.

On the other hand, disease-related malnutrition is associated with a greater use of resources and increases in health care costs. A recent study conducted in the Netherlands estimated that the direct costs of disease-related malnutrition in the paediatric population of this country amounted to approximately 80 million euro a year.¹

In children, disease-related malnutrition may develop in the context of either acute or chronic disease and hinder recovery. Malnutrition not only interferes with the normal growth of the child, as sustained energy and protein imbal-

ances lead to changes in body composition and functional impairment in organs and tissues, with detrimental consequences in the short and the long term.

One example of the association between disease and nutritional status is malnutrition in children with inflammatory bowel disease (IBD), a disorder in which loss of appetite and increased energy expenditure are associated with decreased serum levels of insulin-like growth factor 1 (IGF-1) secondary to the activity of proinflammatory cytokines. The addition of biologic agents to the therapeutic armamentarium against paediatric IBD has achieved an improvement in growth outcomes in these children. Bone health is also frequently affected in patients with IBD in association with micronutrient deficiencies, decreased physical activity and inflammation itself.

Gastrointestinal diseases are not the only diseases that can affect nutritional status. There is ample evidence of the growth impairment experienced by children with chronic renal diseases, and also of the positive impact that nutritional therapy can have on the outcomes of renal disease.

Nutritional assessment and treatment should therefore be included in the comprehensive care of ill children. In the current issue of *Anales de Pediatría*, Santiago Lozano et al. report a substantial prevalence of malnutrition in a sample of children managed with continuous renal replacement therapy in a paediatric intensive care unit.² In recent years, there has been a growing interest in the early detection of patients at risk of developing complications related to nutrition during hospitalization. This has led to the development of different nutritional screening tools designed specifically for this purpose, and studies have been published documenting the association between nutritional risk in hospitalised

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children and the incidence of short-term complications.³ However, the use of such screening tools in children's hospitals in Spain is not yet widespread, and the importance of maintaining an adequate intake is often underestimated or overlooked in the management of ill children.

From a nutritional standpoint, every specific situation in which a child is ill requires correct assessment, not only to determine the nutritional status itself, but also to determine the impact that the underlying disease and its treatment may have on energy expenditure and the metabolic use of nutrients (which will depend on the affected organs and the type of damage). Doing this allows the establishment of specific goals and identifying the most suitable strategy of nutritional care. The methods used for nutritional assessment range from basic techniques like anthropometric measurements, which, when performed by adequately trained staff following a standardised procedure, can yield a significant amount of information, to more sophisticated procedures such as bioelectrical impedance analysis to study body composition or indirect calorimetry to estimate the energy expenditure, which are very useful when body weight is affected by non-nutritional factors or in cases in which it is difficult to estimate the degree of metabolic stress.

Maintenance of optimal growth should be one of the treatment goals in children with chronic disease. In this regard, when analysis of body composition is a possibility, it can contribute relevant data to help plan nutritional interventions. The original article included in this issue of *Anales de Pediatría*, "Nutritional status of a population with moderate-severe cerebral palsy: Beyond the weight", Martínez de Zabarte Fernández *et al.* demonstrated that the functional impairments associated with cerebral palsy can influence the development of fat-free mass and therefore have an impact on energy expenditure.⁴ Children with cerebral palsy often exhibit a mixed form of malnutrition, with a decrease in fat-free body mass and a relative excess of fat body mass. Children with more severe forms of

disease experience multiple circumstances that interfere with maintaining an adequate nutritional status: impaired oral function, dysphagia, changes in intestinal motility, prolongation of the time required to have one meal, physical inactivity, etc. In many cases, these impairments are indications for prescription of specific nutritional interventions delivered via gastrostomy tube.

The prescription of enteral nutrition in chronically ill children must be made with caution and taking into account not only factors related to nutrition and the underlying disease, but also individual and family-related factors. Adequate nutritional care should not only seek to improve growth and clinical outcomes, but also the quality of life of children and their families. Many children with chronic diseases would benefit from some form of nutritional intervention, to be determined based on the type of disease and the degree of nutritional impairment. To achieve this benefit, it is essential that health care professionals become aware of the importance of nutrition as part of the treatment plan.

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