Experimental studies as well as recent clinical trials show that providing larger amounts of DHA than currently and routinely provided is associated with better neurological outcomes at 18 months to 2 years.

Long-Chain Polyunsaturated Fatty Acids and Clinical Outcomes of Preterm Infants

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Key insights

Infants who are born prematurely have unique nutritional requirements due to their immaturity. The standard nutritional management of premature infants results in deficiencies in long-chain polyunsaturated fatty acids (LCPUFAs), particularly docosahexaenoic acid (DHA). Providing higher levels of DHA than routinely given is associated with better neurological and clinical outcomes.

Current knowledge

Infants who are born premature or extremely premature have a high risk of morbidities and mortality. During their initial hospitalization, parenteral nutrition is given to meet their nutritional needs. LCPUFAs play important roles in perinatal growth and development and are therefore an important component of nutrition for these infants. In premature infants, the endogenous capacity for synthesizing DHA and eicosapentaenoic acid is not sufficient to meet their requirements for these critical LCPUFAs. Limited supply of LCPUFAs through external nutritional sources further exacerbates the problem.

Practical implications

Currently, the nutritional management of preterm infants results in an early and severe deficit in DHA. The smallest and most premature infants are especially vulnerable; these infants are the most likely to benefit from high-dose DHA supplementation. Due to their immaturity, premature infants are at risk of concomitant diseases such as bronchopulmonary dysplasia, retinopathy of prematurity, necrotizing enterocolitis, and white matter injury of the brain. Supplementation with LCPUFAs including DHA has been used to alleviate these risks, possibly as a consequence of their anti-inflammatory effects. Despite some conflicting findings, the main message from clinical studies indicates that supplementing with adequate levels of LCPUFAs is an important step towards optimizing the clinical outcomes of premature infants.

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