NEURODEVELOPMENT

Postnatal Head Growth in Preterm Infants: A Randomized Controlled Parenteral Nutrition Study

Background

Head growth is correlated with later neurodevelopmental outcomes in preterm infants. Very preterm infants dependent on parenteral nutrition are vulnerable to deficits in early postnatal nutritional intake. Observational studies indicate that poor nutritional intake is associated with suboptimal head growth and neurodevelopmental outcome. Colin Morgan and colleagues hypothesized that a Standardized, Concentrated With Added Macronutrients Parenteral (SCAMP) nutrition regimen would improve early head growth and conducted a Randomized Controlled Study.

Summary of results

150 infants (74 SCAMP, 76 controls) <29 weeks' gestation, <1200 g were recruited between October 2009 and July 2012. Comparing cumulative 28-day intakes, the SCAMP group received 11% more protein and 7% more energy. The SCAMP group had a greater growth of head circumference (HC) at 28 days ($P < .001$). HC differences were still apparent at 36 weeks' corrected gestational age.

Strength

The findings of this study provide the first Randomized Controlled Trial evidence that early head growth failure can be ameliorated by early nutritional intervention in very preterm infants.

Limitations

The study was not powered to assess major preterm complications. Although the study is due to report neurodevelopmental outcomes at 2 to 3 years, it is not powered to detect a difference in this secondary outcome.

Practical conclusion

This study reveals that head growth in the first 28 days of life can be improved by increasing parenteral protein and energy intake in infants <29 weeks' gestation. The authors conclude, that early postnatal head growth failure in very preterm infants can be ameliorated by optimizing parenteral nutrition.

Colin Morgan et al., "Postnatal Head Growth in Preterm Infants: a Randomized Controlled Parenteral Nutrition Study.," Pediatrics 133, no. 1 (January 2014): e120–8, doi:10.1542/peds.2013-2207.

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