Glutamine supplementation to prevent morbidity and mortality in preterm infants

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RHL summary

Glutamine is vital for growth, development, and recovery from critical illness. However, well-conducted trials of glutamine supplementation in preterm infants did not find any significant effect of the amino acid on neonatal mortality, morbidity, or neurodevelopmental outcomes.

Cochrane review

Citation: Moe-Byrne T, Wagner JVE, McGuire W. Glutamine supplementation to prevent morbidity and mortality in preterm infants. Cochrane Database of Systematic Reviews 2012 Issue 3. Art. No.: CD001457. DOI: 10.1002/14651858.CD001457.pub4.

Abstract

Glutamine is a conditionally essential amino acid. Endogenous biosynthesis may be insufficient for tissue needs in states of metabolic stress. Evidence exists that glutamine supplementation improves clinical outcomes in critically ill adults. It has been suggested that glutamine supplementation may also benefit preterm infants.

To determine the effects of glutamine supplementation on mortality and morbidity in preterm infants.

We used the standard search strategy of the Cochrane Neonatal Review Group. This included searches of the Cochrane Central Register of Controlled Trials (The Cochrane Library, 2011, Issue 4), MEDLINE, EMBASE and CINAHL (to November 2011), conference proceedings and previous reviews.

Randomised or quasi-randomised controlled trials that compared glutamine supplementation versus no glutamine supplementation in preterm infants at any time from birth to discharge from hospital.

We extracted data using the standard methods of the Cochrane Neonatal Review Group, with separate evaluation of trial quality and data extraction by two review authors. We synthesised data using a fixed-effect model and reported typical relative risk, typical risk difference and weighted mean difference.

We identified 11 randomised controlled trials in which a total of 2771 preterm infants participated. Five trials assessed enteral glutamine supplementation and six trials assessed parenteral glutamine
supplementation. The trials were generally of good methodological quality. Meta-analysis did not detect a statistically significant effect of glutamine supplementation on mortality [typical relative risk 0.98 (95% confidence interval 0.80 to 1.18); risk difference 0.00 (95% confidence interval -0.03 to 0.02)] or major neonatal morbidities including the incidence of invasive infection or necrotising enterocolitis. Two trials that assessed neurodevelopmental outcomes at 18 to 24 months did not find any statistically significant differences in various assessments.

The available trial data do not provide evidence that glutamine supplementation confers important benefits for preterm infants.

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Home > Glutamine supplementation to prevent morbidity and mortality in preterm infants