Letters to the Editor

Letter to the Editor: Plasma L-alanine and L-asparagine Levels and Growth in Preterm Infants

Letter to the Editor**:** Plasma L-alanine and L-asparagine Levels and Growth in Preterm Infants

Dear Editor:

Measuring plasma metabolites is not readily available as a bedside tool to assess growth in preterm infants. Nilsson et al. (1) have shown a positive correlation between serum L-asparagine levels and growth parameters among preterm infants. Earlier, Aliu et al. (2) showed an association between a reduction in L-asparagine levels in very preterm infants and extrauterine growth restriction (EUGR). In a recent study, You et al. (3) elucidated the importance of plasma L-alanine and L-asparagine levels in the growth of preterm infants with and without bronchopulmonary dysplasia (BPD). In their research, You et al. (3) identified ten distinct plasma metabolites at 36 weeks postmenstrual age. They noted a decrease in plasma L-alanine and L-asparagine levels in infants diagnosed with BPD.

Interestingly, the percentages of infants with small for gestational age (SGA) and EUGR at discharge were higher in the no-BPD group (13% vs. 6.7 % SGA, 80 % vs. 76.7% EUGR). Despite having more SGA and EUGR presentations, the infants with no BPD but with higher plasma L-alanine and L-asparagine levels had good catch-up growth by two years of age (Figure 1), implying the importance of plasma L-alanine and L-asparagine levels in growth. This unique finding needs further exploration.

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References:

1. Nilsson AK, Tebani A, Malmodin D, et al. Longitudinal Serum Metabolomics in Extremely Premature Infants: Relationships With Gestational Age, Nutrition, and Morbidities. *Front Neurosci*. 2022;16:830884. Published 2022 February 17. doi:10.3389/fnins.2022.830884
2. Aliu E, Kanungo S, Arnold GL. Amino acid disorders. *Ann Transl Med* .2018;6(24):471. doi: 10.21037/atm.2018.12.12
3. You Y, Wang L, Liu C, et al. Early metabolic markers as predictors of respiratory complications in preterm infants with bronchopulmonary dysplasia. *Early Hum Dev*. Published online January 28, 2024. doi:10.1016/j.earlhumdev.2024.105950

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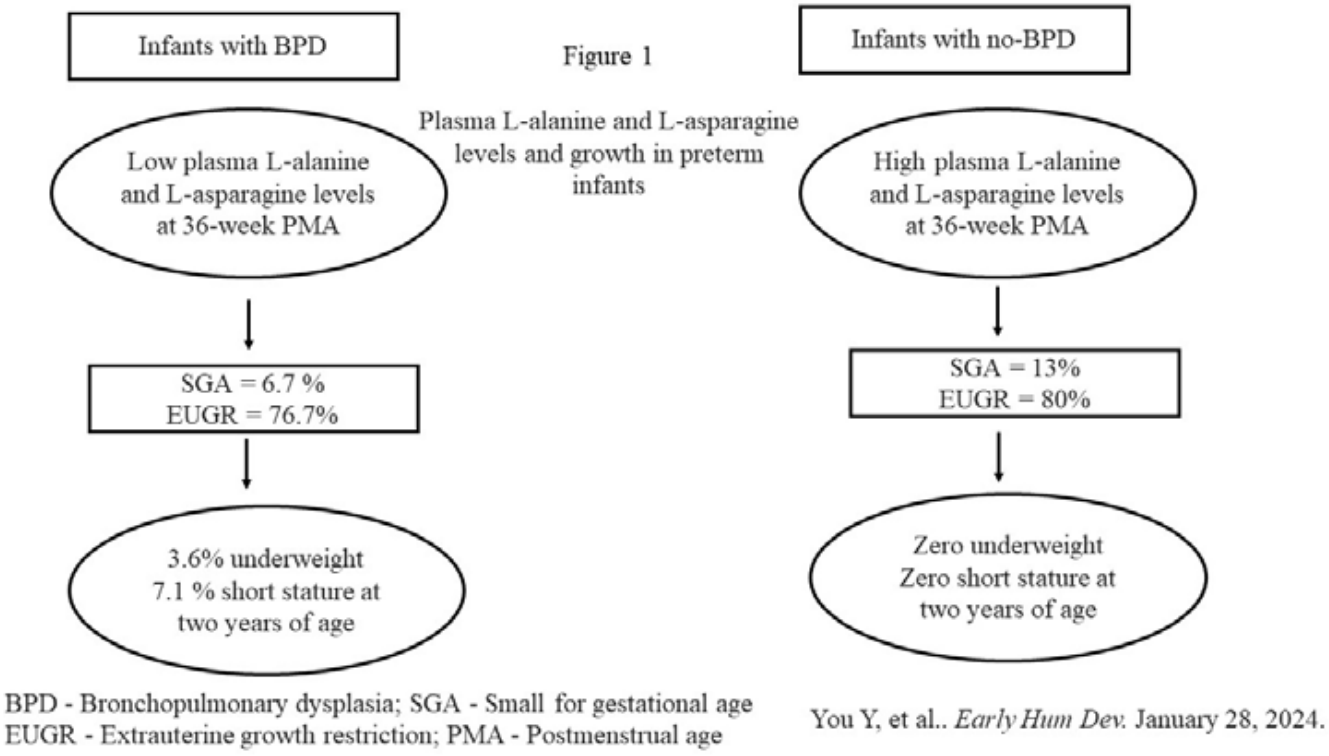

Figure 1

Plasma L-alanine and L-asparagine levels and growth in preterm infants

BPD - Bronchopulmonary dysplasia; SGA - Small for gestational age
EUGR - Extrauterine growth restriction; PMA - Postmenstrual age

You Y, et al.. *Early Hum Dev.* January 28, 2024.

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Dear Dr. Manzar:

Thank you for this exciting observation. The use of plasma metabolites to indicate potential growth potential has not been adequately explored. BPD, we know can influence growth and is not uniform in its presentation. While it would make sense that those babies with BPD might have decreased growth potential, the idea that those without BPD might be protected either with enhanced plasma metabolite supplementation or if their nutrition had been optimal in providing the necessary precursors for catch-up growth may be novel. (1-3)

"While it would make sense that those babies with BPD might have decreased growth potential, the idea that those without BPD might be protected either with enhanced plasma metabolite supplementation or if their nutrition had been optimal in providing the necessary precursors for catch-up growth may be novel. (1-3)"

Indeed, any stressor might be sufficient to reduce growth velocity, and thus, growth potential might also reduce the concentration of various plasma metabolites (while reducing others). This phenomenon may not be unique to the presence of BPD and may also be present with any number of other stressors. Or, BPD may alone be sufficient to reduce the concentration of these metabolites.

"Indeed, any stressor might be sufficient to reduce growth velocity, and thus, growth potential might also reduce the concentration of various plasma metabolites (while reducing others)."

The findings presented in the study by You et al. shed light on the potential role of plasma L-alanine and L-asparagine levels in assessing the growth trajectory of preterm infants, particularly those at risk of bronchopulmonary dysplasia (BPD). The observed correlation between reduced levels of these metabolites and the diagnosis of BPD underscores the intricate interplay between metabolic factors and respiratory health in this vulnerable population. (3)

Of particular interest is the divergent growth outcomes observed in infants without BPD but with varying plasma L-alanine and L-asparagine levels. Despite a higher prevalence of small for gestational age (SGA) and extrauterine growth restriction (EUGR) at discharge in this group, those with elevated levels of these metabolites exhibited notable catch-up growth by two years of age. (2) This suggests a potential compensatory mechanism or metabolic resilience that merits further investigation.

"Despite a higher prevalence of small for gestational age (SGA) and extrauterine growth restriction (EUGR) at discharge in this group, those with elevated levels of these metabolites exhibited notable catch-up growth by two years of age. (2) This suggests a potential compensatory mechanism or metabolic resilience that merits further investigation."

The implications of these findings extend beyond clinical practice to our understanding of the metabolic underpinnings of growth in preterm infants. By elucidating the relationship between plasma metabolites and growth outcomes, this research opens avenues for targeted interventions to optimize nutritional support and foster optimal growth trajectories in this vulnerable population.

Exploration into the mechanisms underlying the observed associations and the long-term implications of altered plasma metabolite levels is warranted. Such investigations promise to refine existing growth assessment and intervention strategies in preterm infants, ultimately improving their long-term health outcomes.

Further research into this area is essential and may inform better care of our most at-risk NICU graduates.

References:

1. Nilsson AK, Tebani A, Malmodin D, et al. Longitudinal Serum Metabolomics in Extremely Premature Infants: Relationships With Gestational Age, Nutrition, and Morbidities. *Front Neurosci*. 2022;16:830884. Published 2022 February 17. doi:10.3389/fnins.2022.830884
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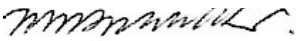
Sincerely,



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Erratum (Neonatology Today January, 2024)

Neonatology Today is aware that an early release of January 2024 incorrectly listed Dr. Nicole Kraus as an "MD" instead of a "DO." We apologize for the oversight. The correct title is now listed in the electronic repository.

Corrections can be sent directly to LomaLindaPublishingCompany@gmail.com. The most recent edition of Neonatology Today including any previously identified erratum may be downloaded from www.neonatologytoday.net.

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Neonatology Today welcomes your editorial commentary on previously published manuscripts, news items, and other academic material relevant to the fields of Neonatology and Perinatology.

Please address your response in the form of a letter. For further formatting questions and submissions, please contact Mitchell Goldstein, MD at LomaLindaPublishingCompany@gmail.com.

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