

ORIGINAL RESEARCH COMMUNICATION

Arginine flux and intravascular nitric oxide synthesis in severe childhood undernutrition^{1, 2, 3}

Farook Jahoor, Asha Badaloo, Salvador Villalpando, Marvin Reid and Terrence Forrester

¹ From the US Department of Agriculture/Agricultural Research Service, Children's Nutrition Research Center, Department of Pediatrics, Baylor College of Medicine, Houston, TX (FJ and SV), and the Tropical Metabolism Research Unit, Tropical Medicine Research Institute, University of the West Indies, Mona, Kingston, Jamaica (AB, MR, and TF)

Background: Although nutritionally dispensable amino acids are not essential in the diet, adequate synthesis is necessary for maintenance of good health. Whereas children with edematous severe childhood undernutrition (SCU) can maintain production rates of glycine and serine despite a slower body protein breakdown rate, it is unknown whether the same is true for the semi dispensable amino acid arginine.

Objective: We aimed to measure arginine flux and intravascular nitric oxide synthesis in children with SCU.

Design: Arginine flux and the fractional and absolute synthesis rates of plasma nitrite plus nitrate were measured postabsorptively by using a 6-h infusion of [¹⁵N₂]-arginine in 2 groups of children with edematous (*n* = 14) or nonedematous (*n* = 7) SCU when they were infected and malnourished (postadmission day ≈3; clinical phase 1), when they were no longer infected (postadmission day ≈15; clinical phase 2), and when they were recovered (postadmission day ≈55; clinical phase 3).

Results: Arginine flux was slower (*P* < 0.01) and plasma arginine concentrations were lower in the edematous group than in the nonedematous group at clinical phase 1. At clinical phase 2, flux doubled to a value that was not significantly different from the value at clinical phase 3. There were no significant differences in the plasma concentration or fractional or absolute synthesis rate of plasma nitrite plus nitrate between the groups at any clinical phase and among clinical phases within each group.

Conclusion: Whereas children with nonedematous SCU can maintain arginine flux at the same rate as when recovered, children with edematous SCU cannot. The slower arginine flux was not, however, associated with slower nitric oxide synthesis.

Key Words: Arginine kinetics • nitric oxide • edematous severe childhood undernutrition • nonedematous severe childhood undernutrition • marasmus • kwashiorkor

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