

Abstract

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Endothelial function in newborn infants is related to folate levels and birth weight.

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OBJECTIVE: Low maternal folate levels during pregnancy correlate with low birth weight, a perinatal risk factor for later cardiovascular disease. We studied relationships between red blood cell folate levels, birth weight, and vascular endothelial function (a key factor in the early pathophysiologic processes of heart disease) in newborn infants.

METHODS: We included 82 infants (30 low birth weight) and their mothers. A laser Doppler technique was used to measure skin perfusion during transdermal iontophoresis of acetylcholine (an endothelium-dependent vasodilator). Red blood cell folate, vitamin B12, and homocysteine levels were determined.

RESULTS: The perfusion response to acetylcholine was lower in low birth weight infants than in normal birth weight control subjects (mean: 35 vs 76 perfusion units). The neonatal acetylcholine response correlated with red blood cell folate levels in both infants and their mothers. The folate levels of low birth weight and control infants did not differ significantly (mean: 1603 vs 1795 nmol/L), but mothers of low birth weight infants had lower folate levels than did mothers of control infants (mean: 805 vs 1109 nmol/L). **In multivariate analysis, low birth weight and red blood cell folate levels contributed independently to endothelial function in newborn infants.** The levels of vitamin B12 and homocysteine were similar in the 2 groups and did not correlate with endothelial function.

CONCLUSION: **The data presented here provide the first evidence for a relationship between folate levels and vascular endothelial function in newborn infants.**

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