

Cord Blood High Density Lipoproteins: Leningrad and Cincinnati*

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Summary

Adult Russian males (ages 40-49) have recently been shown, in collaborative Lipid Research Clinic (LRC) studies, to have substantially higher (8-10 mg/dl) plasma high-density lipoprotein cholesterol (C-HDL) than adult American males. Since C-HDL has a powerful inverse correlation with the risk of developing coronary heart disease, elucidation of the etiology of cross-cultural differences in C-HDL may be important in developing approaches to prevent or ameliorate coronary heart disease. This LRC study, using identically standardized LRC laboratories, focused on cord blood C-HDL in 423 neonates of Leningrad (USSR) and 425 neonates of Cincinnati (USA) to determine whether, like Russian adults, Russian neonates had higher C-HDL levels. Mean C-HDL levels in male and female American neonates were slightly (1-2 mg/dl), but not significantly higher ($P = 0.22, 0.22$) than in male and female Russian neonates, respectively. In subsets of the neonate American (260 of 425) and Russian (174 of 423) groups, mean C-HDL levels were 3 mg/dl and 3 mg/dl higher, respectively,

in male and female American neonates than in their Russian counterparts, and these small mean differences were statistically significant, $P < 0.025$. Thus, adult Russian-American differences in C-HDL were not echoed by comparisons of neonates, using identical laboratory methods for lipoprotein determination. The within-culture, cross-sex comparisons of cord blood lipids and lipoproteins, did, however, parallel findings in older children and young adults. Both female American and Russian neonates had higher C-HDL levels than did males ($P = 0.001, 0.002$). Within the limits of inheritance as expressed by cord blood lipoproteins, the dichotomy between Russian and American neonates and adults for C-HDL suggests that higher adult Russian C-HDL levels may possibly reflect an aggregate of variables grouped under the term "environmental effect."

Speculation

Because population studies and studies of kindreds with familial hyper- α -lipoproteinemia reveal a strong inverse correlation of C-HDL with coronary heart disease, the elucidation of the etiology of cross-cultural and cross-racial differences in C-HDL might have considerable importance in identifying "protective" environmental differences relevant to development of coronary heart disease.

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