Abstract


Carnitine status of pregnant women: effect of carnitine supplementation and correlation between iron status and plasma carnitine concentration.


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BACKGROUND/OBJECTIVES: It has been shown that plasma carnitine concentrations markedly decline during gestation in women. The reason for this, however, is unknown. One objective of this study was to investigate the effect of carnitine supplementation on plasma carnitine concentrations in pregnant women. The second objective was to investigate the hypothesis that reduced plasma carnitine concentrations during gestation are caused by a reduced carnitine synthesis because of a diminished iron status.

SUBJECTS/METHODS: Healthy pregnant women (n=26) were randomly assigned in two groups receiving either a L-carnitine supplement (500 mg L-carnitine per day as L-carnitine L-tartrate) (n=13) or placebo (n=13) from the 13th week of gestation to term.

RESULTS: In the control group, there was a marked reduction of plasma carnitine concentration from the 12th week of gestation to term. This reduction was prevented by the supplementation of carnitine. In the control group, there was a positive relationship between the parameters of iron status (mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH) and ferritin) and plasma concentration of carnitine (P<0.05). Moreover, there were inverse correlations between the concentrations of ferritin and the carnitine precursor gamma-butyrobetaine in plasma, and between gamma-butyrobetaine and carnitine in plasma (P<0.05).

CONCLUSIONS: This study confirms that plasma carnitine concentrations decline in the course of pregnancy, an effect that can be prevented by the supplementation of carnitine. Data of this study, moreover, suggest that the decline of plasma carnitine concentration during pregnancy could be caused by a reduced rate of carnitine biosynthesis, possibly because of an inadequate iron status.

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