

Abstract

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Study on the correlation of serum folate and red blood cell folate level with birth defects and unexplained recurrent pregnancy loss

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OBJECTIVE: To understand the correlation of lower serum folate, and red blood cell (RBC) folate level with birth defects including unexplained recurrent pregnancy loss, and to evaluate the role of RBC folate level as a suitable marker for folate supplement.

METHODS: Two hundred and ninety-nine non-pregnant women at child-bearing age with a birth defect history were selected as birth defect group. The levels of serum and RBC folate, and serum vitamin B(12) were determined. By comparing with the group of non-pregnant women at child-bearing age without any birth defect history (control group), we evaluated the correlation between lower serum folate, RBC folate level and main kinds of birth defects including unexplained recurrent pregnancy loss. And the levels of serum and RBC folate of birth defect group were also determined and compared before and after oral folate intake (5 mg/d) for one month.

RESULTS: The serum folate level of birth defect group was not different from the control group (17 - 26 vs 14 nmol/L, $P > 0.05$). The RBC folate level of birth defect group except the urinary defect was significantly lower compared with the control group (233 - 547 vs 689 nmol/L, $P < 0.05$). After the oral folate intake (5 mg/d), the serum folate level of unexplained recurrent pregnancy loss group and neural tube defects group were significantly increased than before [(22 +/- 9) vs (27 +/- 12) nmol/L, (19 +/- 10) vs (25 +/- 18) nmol/L; $P < 0.05$]. The RBC folate level of unexplained recurrent pregnancy loss group and congenital heart defect group were significantly increased than before [(374 +/- 275) vs (567 +/- 397) nmol/L, (322 +/- 205) vs (527 +/- 351) nmol/L, $P < 0.05$].

CONCLUSION: RBC folate level is more closely correlated than serum folate level with the incidence of main birth defect.

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