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Homocysteine and recurrent miscarriage

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Abstract

Background: It is known that etiological structure of recurrent miscarriage has genetic, anatomical, infectious and immunological factors; however, the cause of recurrent miscarriage in 50-60% of cases is not completely clear. Homocysteine is a sulfur-containing intermediate product in the normal metabolism of methionine. Development mechanisms of vascular complications of hyperhomocysteinemia are currently being intensively studied. Hyperhomocysteinemia affects a number of mechanisms involved in thrombogenesis including coagulation cascade, vessel-thrombocytic section, oxidation-reduction reactions, endothelium, and vascular smooth muscle cells and is associated with an increased risk of adverse outcomes in pregnancy.

Materials and methods: The study included 50 women who had experienced the loss of at least two consecutive pregnancies. The level of the total serum homocysteine was measured via the chemiluminescent method.

Results: We found that plasma homocysteine concentration $< 10 \mu\text{mol/l}$ was found in 16 patients (32.0%, 95% CI 19,07 – 44,93), 9 patients (18.0%, 95% CI 7,36 – 28,64) had a fasting plasma homocysteine between $10 \mu\text{mol/l}$ to $12 \mu\text{mol/l}$ and 25 patients (50.0%, 95% CI 36,15 – 63,85) had significantly high total serum homocysteine values. Among them, 23 patients (46.0%, 95% CI 32,19 – 59,81) had the concentration between $12 - 30 \mu\text{mol/l}$ and 2 patients (4.0%, 95% CI -1,43 – 9,43) had the concentration $> 30 \mu\text{mol/l}$. The complex of B vitamin supplementation was recommended at least 2 to 3 months before conception. In the current study, 40 women (80.0%, 95% CI 68,92 – 91,08) have become pregnant, passed the critical periods for pregnancy loss and continued the folate intake during the pregnancy.

Conclusions: The prevalence of hyperhomocysteinemia was more in unexplained primary early recurrent miscarriages. The complex of B vitamin supplementation was recommended at least 2 to 3 months before conception and 40 women (80.0%, 95% CI 68,92 – 91,08) became pregnant, passed the critical periods for pregnancy loss and continued the folate intake during the pregnancy.

Key words: homocysteine, spontaneous abortion, recurrent abortion, vitamin B supplementation.