CORRESPONDENCE

The Mandatory Fortification of Staple Foods With Folic Acid: A Current Controversy in Germany

by Prof. Dr. med. habil. Wolfgang Hermann und Prof. Dr. rer. med. Rima Obeid in volume 15/2011

Don't Forget Celiac Disease

Although folic acid supplementation before conception cannot prevent neural tube defects in every case, regular folic acid intake can lower the risk of this malformation by 75% and in the repeat scenario by 70%. One cause for folic acid administration to fail in preventing neural tube defects may in some cases be the presence of unidentified celiac disease. If such a gluten-related enteropathy is present, where the small intestine's resorption is impaired owing to more or less pronounced atrophy of the villi of the small-intestinal mucosa, then the resorption of folic acid is reduced too. We have described this problem in detail elsewhere (1). Celiac disease should therefore be ruled out in every woman who gives birth to a baby with a neural tube defect. This is done by measuring celiac specific serological antibodies, such as the endomysial antibodies or tissue transglutaminase antibodies. Since these antibodies belong to immunoglobulin class A, IgA deficiency needs to be ruled out at the same time. If a woman tests positive for antibodies then the presence of celiac disease needs to be confirmed by a small intestinal biopsy, using gastroduodenoscopy. It would be optimal to test all women for celiac disease before they become pregnant.

Recently, orofacial clefting has also been considered in association with folic acid deficiency (2).

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Prof. Dr. med. Jobst Henker

Kinderzentrum Dresden-Friedrichstadt, jobst.henker@uniklinikum-dresden.de

Prof. Dr. med. Peter Zimmer

Justus-Liebig Universität, Gießen, Germany

Conflict of interest statement

Professor Henker declares that no conflict of interest exists. Professor Zimmer holds shares in the Rhön-Klinikum (medical center) and also receives licensing fees. He holds a patent for the gliadin-peptide vaccine. Professor Zimmer has also received honoraria for acting as an adviser, from Sanofi and Merck. Falk has reimbursed his travel expenses and participation fees. Nestlé and Falk have both paid honoraria for speaking. He has received moneys in third-party accounts from Nestlé.

In Reply:

We agree that patients with unrecognized celiac disease or those who do not follow a gluten-free diet have a reduced absorption of folic acid (1). In women who give birth to babies with neural tube defects, celiac disease should therefore be ruled out as a cause. We do not agree with the suggested strategy of general, preconceptional, serological diagnostic evaluation to exclude celiac disease because other factors may affect the availability or utilization of folate. Among these are malabsorption, inflammatory bowel disorders, Crohn's disease, ulcerative colitis, gastritis, vitamin B-12 deficiency, or medications that affect the pH value in the small intestine. In principle, factors that reduce the availability of folate can be categorized into three groups:

- Group 1: Factors or disorders that impair the resorption of folate
- Group 2: Lifestyle factors that result in reduced bioavailability of folate, such as smoking, alcohol, or a diet that is lacking folate
- Group 3: Increased requirement for folate (genetic polymorphisms, pregnancy, breastfeeding period, treatment with cytotoxic drugs).

Vitamin B-12 deficiency can also trigger functional folate deficiency via disruption of the folate utilization (folate trap) (2). In the US, there is now a discussion that fortification of staple foods should not only include folic acid but also vitamin B-12. A focused strategy would be more targeted, that is: preconceptional measurements of serum folate and, if required, vitamin B-12 serum concentrations in order to ensure that the folate supply is sufficient and the utilization of folate is not impaired.

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Prof. Dr. rer. med. Rima Obeid

Klinische Chemie und Laboratoriumsmedizin, Universitätsklinikum des Saarlandes, Homburg, rima.obeid@uniklinik-saarland.de

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Professor Herrmann has received honoraria for acting as an adviser to Axis-Shield Diagnostics and Synervit. Furthermore he was reimbursed for delegate fees for conferences by Abbott Diagnostics and Axis-Shield. He has received research funding from Synervit. Professor Obeid has received research funding from Merck and Synervit.