VITAMIN B_{12} AND NEURAL-TUBE DEFECTS

Low maternal vitamin B_{12} status is an independent risk factor for having a child with a neural-tube defect, according to a study published in *Pediatrics*.

Adequate intake of folic acid can prevent the majority of neural-tube defects. Fortification of grain with folic acid in countries including the US has reduced the prevalence of these defects; however, further folic-acid fortification is unlikely, as concerns about possible adverse effects exist. To further reduce prevalence of neural-tube defects, additional, modifiable maternal risk factors for these defects must be identified. Molloy and colleagues focused on vitamin B_{12}, because of its close metabolic association with folate and evidence of a link between low maternal levels of the vitamin and pregnancies affected by neural-tube defects.

In three separate, nested, case–control studies, the investigators analyzed concentrations of vitamin B_{12} in blood samples taken from pregnant women at an average 15 weeks of gestation who had a child with neural-tube defects at either that pregnancy or a previous one. Crucially, the samples used (from the 1980s) predated widespread folic-acid fortification.

In all three groups (after adjustment for folate) women with vitamin B_{12} concentrations in the lowest quartile had a twofold to threefold increased risk of having a child with a neural-tube defects compared with those in the highest quartile. The majority of risk was associated with vitamin B_{12} concentrations of <184 pmol/l.

The researchers conclude that folate and vitamin B_{12} jointly influence a woman's risk of having a child with neural-tube defects and that women can reduce this risk by ensuring that they have adequate vitamin B_{12} levels before they become pregnant.

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Original article Molloy, A. M. *et al.* Maternal vitamin B_{12} status and risk of neural tube defects in a population with high neural tube defect prevalence and no folic acid fortification. *Pediatrics* **123**, 917–923 (2009).