



VITAMIN SUPPLEMENTATION IN THE PREVENTION OF NEURAL TUBE DEFECTS



Introduction

One of the first parts of the body to develop is the central nervous system. The neural tube, from which the spinal cord and brain develop, is formed within the first 25 days of pregnancy. Spina bifida is caused by the failure of the neural tube to develop properly, hence the term 'neural tube defects'. Related defects are anencephaly (the absence of a brain) and encephalocele (a malformation of the brain and skull).



Why does the neural tube develop incorrectly?

The causes are not yet known and are thought to be connected with both genetic and environmental factors. If a couple have had one affected child, the risk of recurrence in another pregnancy is calculated at about 1 in 35.



What has research shown?

Recent research on the addition of folic acid (vitamin B9) to the diet has shown conclusively that women who have had a pregnancy affected by neural tube defect can reduce their chances of having a second affected pregnancy - by a dramatic 72%.

In April 1983, the Medical Research Council began a clinical trial of folic acid and other vitamin supplements in the prevention of neural tube defects.

The trial was conducted at 33 centres in seven countries and the results were announced in July 1991. The dose given to women taking folic acid by itself was 4 mg a day.

The women recruited to the trial and each child born during the trial were checked for possible

adverse effects. The infants continued to be monitored until their third birthday. As yet, no ill-effects caused by folic acid supplements have been reported in either the mothers or their babies.



What does this mean in practice?

These results show that folic acid supplements can reduce the risk of neural tube defects happening again. For mothers specially at risk, folic acid should be taken in tablet form for at least one month before conception and then then throughout the first 12 weeks of pregnancy. It is obtained on prescription through their GPs. High-risk groups are women with a neural tube defect, those who have had a baby with an NTD or those who have a close relative with an NTD. The Government's chief medical officer has already advised doctors that they may prescribe folic acid to any women asking for it, and ASBAH is urging the Government to make these prescriptions free.

Women who have not been identified as being in a high-risk group may also benefit from taking folic acid tablets. These are available in lower-dosage 0.4mg tablets, found among the vitamin displays in pharmacies and health food shops. Again, these should be taken for at least one month before conception and then until the end of the first 12 weeks of pregnancy.

At present, the only tablets available on prescription in the United Kingdom contain 5 mg of folic acid. Some doubts remain that this dosage may be larger than necessary for preventative effect and it is 1 mg larger than the amount used in the Medical Research Council trial. The chief medical officer says 5mg will be replaced by a 4mg tablet as soon as this dosage is available.

Women in families where there has been spina bifida in other relatives may wish to receive genetic counselling. In these cases, they should ask their doctors to refer them to a genetic counsellor. ASBAH has another Information Sheet on this topic, which is also available free of charge.



A healthy diet can help

Many studies, however, have shown that diet is a contributory factor to the well-being of the foetus and it would seem prudent for women who are planning to become pregnant to ensure that their diet is reinforced with items in which folic acid naturally occurs. These include barley, baked beans, brewer's yeast, endive, chick peas, green leafy vegetables, lentils, orange juice, oranges, peas, rice, soya beans, split peas, sprouts, wheat and wheat germ. Vegetables should be lightly cooked as over-boiling destroys their vitamin content. Advice to eat liver should not be heeded: liver contains concentrations of vitamin A which, when added to vitamin A intake from other foods, can damage the unborn baby.

Folic acid supplements taken before conception can reduce the risk of neural tube defects recurring. They will not, however, guarantee the elimination of neural tube defects, such as spina bifida. ASBAH remains committed to supporting research into the causes of neural tube defects, their effects on people's lives and the continuing support of the many thousands of people with spina bifida, and their families.



Further Information

More information about diet and vitamin supplementation can be obtained from GPs, health visitors, hospital doctors, dietitians or from the information office at ASBAH; please contact the address given below.

Free copies of the report of an expert working group called *Folic Acid and the Prevention of Neural Tube Defects* may be obtained by writing to: Health Publications Unit, Heywood Stores, No 2 Site, Manchester Road, Heywood, Lancashire OL10 2PZ. A full report on the result of the Medical Research Council vitamin study appeared in *The Lancet* on 19 July 1991.

A summary of the Medical Research Council results

In April 1983, the Medical Research Council started a randomised clinical trial of folic acid and other vitamin supplements in the prevention of neural tube defects. The trial was conducted at 33 centres in seven countries and the results were announced in July 1991. A total of 1,817 women identified as being at high risk of having a pregnancy with neural tube defects, because of a previously affected pregnancy, were recruited to the trial.

Each women was allocated at random to one of four groups. Each group was given tablets containing either folic acid, other vitamins, both, or neither. There were 1,195 completed pregnancies in which the foetus or infant was known to have or not to have a neural tube defect. In total, 27 were identified as having a neural tube defect. Of those 27, six were in the folic acid group and 21 in the other two groups. This demonstrated conclusively that the protective effect was 72% in favour of folic acid. The other vitamins showed no significant protective effect.

The dose of folic acid used in this trial was 4mg, taken in a single daily capsule.

The women recruited to the trial and each child born into the study were monitored for possible adverse effects of folic acid. The infants were monitored until their third birthday. As yet, there has been no demonstrable harm from the folic acid supplementation.



Helping to get more out of life

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