**Vitamin E for Alzheimer's disease and mild cognitive impairment**

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**Synopsis**

Vitamin E is a dietary compound with antioxidant properties involved in scavenging free radicals. Laboratory and animal studies have pointed towards a possible role for Vitamin E in the prevention and management of cognitive impairment. To date only one randomized controlled trial has assessed the efficacy of Vitamin E in the treatment of AD patients and only one assessed the role of Vitamin E in patients with mild cognitive impairment (MCI). In the Vitamin E study for moderately severe AD patients a lower number of those taking Vitamin E declined to incapacity over a two year period compared with the placebo group. However, AD patients taking Vitamin E experienced a greater number of falls. In the MCI study, Vitamin E 2000 IU daily produced no significant difference in the rate of progression to AD compared to the placebo group.

**Abstract**

**Background**

Vitamin E is a dietary compound that functions as an antioxidant scavenging toxic free radicals. Evidence that free radicals may contribute to the pathological processes of cognitive impairment including Alzheimer's disease (AD) has led to interest in the use of Vitamin E in the treatment of Alzheimer's disease and Mild Cognitive Impairment (MCI).

**Objective**


**Search strategy**

The Cochrane Dementia and Cognitive Improvement's Specialized Register was searched on 8 January 2007 using the following terms: "Vitamin E", vitamin-E, alpha-tocopherol. The CDCIG Registers contains records from major health care databases and ongoing trial databases and is updated regularly.

**Selection criteria**

All unconfounded, double blind, randomized trials in which treatment with Vitamin E at any dose was compared with placebo for patients with Alzheimer's disease or Mild Cognitive Impairment.

**Data collection and analysis**

Two reviewers independently applied the selection criteria and assessed study quality and extracted and analysed the data. For each outcome measure data were sought on every patient randomized. Where such data were not available an analysis of patients who completed treatment was conducted.

**Main results**

Only 2 studies met the inclusion criteria. The primary outcome used in the AD study was survival time to the first of 4 endpoints: death, institutionalisation, loss of 2 out of 3 basic activities of daily living and severe dementia (defined as a global Clinical Dementia Rating of 3). The investigators reported the total numbers in each group who reached the primary endpoint within two years for participants completing the study ("completers"). There appeared to be some benefit from Vitamin E with fewer participants reaching endpoint - 58% (45/77) of completers compared with 74% (58/78) - a Peto odds ratio of 0.49, 95% confidence interval 0.25 to 0.96. However, more participants taking Vitamin E suffered a fall (12/77 compared with 4/78; odds ratio 3.07, 95% CI 1.09 to 8.62). It was not possible to interpret the reported results for specific endpoints or for secondary outcomes of cognition, dependence, behavioural disturbance and activities of daily living.

The primary outcome used in the MCI study which had 769 participants (257 in the Vitamin E group and 259 in the placebo group; a third Donepezil group of 253 was not included in this review) was the time to progression from MCI to possible or probable AD. A total of 214 of the 769 participants had progression to dementia, with 212 being classified as having possible or probable AD. There was no significant difference in the probability of progression from MCI to AD between the Vitamin E group and the placebo group. There was no significant difference between the placebo group and the Vitamin E group in adverse events. Five subjects died in each group and 72 discontinued treatment in the Vitamin E group and 66 in the placebo group.

**Reviewers' conclusions**

There is no evidence of efficacy of Vitamin E in the prevention or treatment of people with AD or MCI. More research is needed to identify the role of Vitamin E, if any, in the management of cognitive impairment.

**References to studies included in this review**

Petersen 2005 (published data only)
Sano 1996 (published data only)
Sano M, Growdon J, Klauber M. Expanding the severity range of patients in clinical trials for Alzheimer's disease: a multicentre clinical trial of Selegiline and a-Tocopherol. Neurology 1996;45:289-.
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* indicates the major publication for the study
References to studies excluded from this review
Clarke R, Jacoby RJ. A pilot study for the VITAL trial (Vitamins and Aspirin for the treatment of Dementia). 2002:-.
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Ongoing studies
Additional references
Marcus 1998

McKhan 1984

Mecocci 1994

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Perrig 1997

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Rosen 1984

Schoenfeld 1982

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Wortwein G, Stackman RW, Walsh TJ. Vitamin E prevents the place learning deficit and the cholinergic hypofunction induced by AF64A. Experimental Neurology 1994;125:15-21.

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