Nutritional interventions to slow the progression of AMD

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NICE guideline [NG82][1] on the 'Diagnosis and Management of Age-related Macular Degeneration (AMD) in Adults', was published in January 2018. The guideline committee considered a number of nutritional interventions to slow the progression of AMD including:

- A diet rich in antioxidants and carotenoids
- An omega 3 fatty acid rich diet (or supplementation)
- Antioxidant vitamin supplementation
- Antioxidant mineral supplementation

Having considered Cochrane reviews and other evidence on omega 3 fatty acids and antioxidant vitamin, and mineral supplements for slowing the progression of AMD, the committee felt that the available clinical evidence was insufficient to make any strong recommendations on dietary interventions or supplementation for AMD.

A summary of the evidence from the relevant Cochrane reviews is provided below:

Antioxidant vitamin and mineral supplements to prevent AMD and/or slow down its progression

Age-related macular degeneration is a progressive and sight-threatening disease affecting the central area of the retina. Two updated Cochrane Reviews from July 2017[2,3] present the evidence for the use of antioxidant vitamin and mineral supplements to prevent it or slow down progression.

Age-related macular degeneration, or AMD, affects many people across the world. Approximately, one in three people over 80 years of age have early signs of the disease.

One theory as to why AMD develops relates to "oxidative stress" in the retina, which means that taking anti-oxidant vitamins, such as vitamin C, E carotenoids and zinc might help by reducing this stress and avoiding the cellular damage. Our pair of Cochrane Reviews examine whether antioxidant vitamins and mineral supplements, including lutein and zeaxanthin, can prevent the development of AMD or slow down its progression, and include a total of 24 studies.

Five large studies had compared taking vitamin E, beta-carotene, vitamin C and multivitamin with taking a placebo in people in the general population who did not

have AMD. More than 75,000 people were randomised in these studies. They were followed for 4 to 10 years, and people taking the supplements were found to have a similar chance of developing AMD compared with people not taking the supplements.

The other 19 studies recruited people with AMD and tested various types of vitamins, including lutein and zeaxanthin, against placebo or no treatment. These studies were smaller than the prevention trials, most were of short duration with patients being followed for less than 2 years. The evidence was mixed but one large study from the USA, called AREDS, had follow-up of over 5 years and found that a combination of vitamin C, E, carotenoids, and zinc may slow progression in people with a diagnosis of AMD.

The data from AREDS suggest that there would be approximately 4 fewer cases of progression to late AMD for every 1000 people with very early signs of AMD, who are at low risk of progression, if they take the combination of vitamins used in that trial. In people who already have moderate AMD and are, therefore, at high risk of progression this benefit would rise to approximately 80 fewer cases of progression for every 1000 people taking the vitamins. However, it's important to note that the carotenoid used in AREDS was beta-carotene and there are concerns about its safety in people who smoke. A later study by the same investigators suggested that beta-carotene could be replaced by lutein and zeaxanthin.

Vitamin supplements are generally regarded as safe but there was limited information from these studies on harms. However, evidence from other Cochrane Reviews suggests that mortality in people who take vitamins is generally similar compared with people who do not, with the exception of vitamin E and beta-carotene which are associated with a small increased risk of mortality.

In summary, our reviews show that taking vitamin supplements (vitamin C, E or beta-carotene) is unlikely to prevent the development of AMD but a combination of antioxidant vitamins as used in AREDS may slow down the progression of the disease in people with a diagnosis of AMD.

The following podcast on two Cochrane reviews on antioxidant supplements is available at:

URL: http://www.cochrane.org/podcasts/10.1002/14651858.CD000253.pub4.

Omega 3 fatty acids for preventing and slowing the progression of age-related macular degeneration

Evidence from population studies suggests that people who have a diet with relatively high levels of omega 3 fatty acids (such as those derived from fish oils) are less likely to develop AMD.

A Cochrane review[4] examined whether an increased intake of omega 3 fatty acids via diet or supplementation prevented or slowed the progression of age-related macular degeneration.

Two trials were identified, with a total of 2343 participants. The trials were conducted in the USA and France and investigated the use of fish oil supplements in people with AMD who were at high risk of progressing to advanced disease. We judged the studies to be at low risk of bias.

These studies found that omega 3 supplementation for periods up to five years did not reduce the rate of progression to advanced AMD or reduce significant visual loss compared to a placebo. The incidence of adverse effects was similar in the intervention and placebo groups.

A blog describing the findings of this review is available at:

URL: http://www.evidentlycochrane.net/fishing-for-answers-can-omega-3-supplements-save-our-vision/

References

1. National Institute for Health and Care Excellence. Age-related macular degeneration: diagnosis and management. NICE Guideline NG82. January 2018

URL: https://www.nice.org.uk/guidance/ng82/evidence/full-guideline-pdf-170036251098

2. Evans JR, Lawrenson JG. Antioxidant vitamin and mineral supplements for preventing age-related macular degeneration. Cochrane Database of Systematic Reviews 2017; 7: CD000253

URL: http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD000253.pub4/full

3. Evans JR, Lawrenson JG. Antioxidant vitamin and mineral supplements for slowing the progression of age-related macular degeneration. Cochrane Database of Systematic Reviews 2017; 7: CD000254.

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