



AMD prevention advice

City University student **Gary Chung** undertook a thorough review of nutritional intervention and age-related macular degeneration. Here he summarises his findings and outlines the advice given to patients at the City University Visual Impairment Clinic

Age-related macular degeneration (AMD) is the commonest cause of blindness in the developed world, and the third most prevalent worldwide. AMD has a catalogue of risk factors, including smoking, ageing, race and, controversially, nutrition. Numerous nutritional supplements are currently on sale, claiming to have significant effects on the eyes health, some claiming to slow down AMD.

Nutritional supplements provide what is missing in our diets, to ensure we receive adequate levels of a particular vitamin or mineral. However, they are not a substitute for food and should not be taken in this way. They are intended for patients who cannot for whatever reason (ie oral, digestive problems) consume the recommended daily intake of a vitamin or mineral, thus patients who can increase their levels via dietary measures should.

A large-scale double-masked randomised control trial (AREDS) reported a beneficial role of high dose antioxidants plus zinc for AMD patients with, extensive intermediate size drusen in one eye (category 4). However, no beneficial effect of supplementation has been reported for people with early or

Patients should be advised to eat a healthy, well balanced diet including fresh fruits and vegetables



no signs of the disease.

Substantial evidence suggests that lutein and zeaxanthin is instrumental to the protection of the macular and possibly AMD. Lutein and zeaxanthin are thought to act as antioxidants mopping up unstable compounds such as free radicals and singlet oxygen, as well as absorbing damaging blue light.

There is substantial evidence to state that AMD sufferers have lower macular pigment levels than the norm. Epidemiological studies have shown that lutein and zeaxanthin levels can be raised by consuming a good balanced

diet particularly rich in antioxidants and carotenoids such as kale and collard greens, and by supplementation also. Recent AREDS publications have suggested a benefit in existing AMD patients in the slowing of disease progression with supplementation including the macular pigments. Until convincing evidence has been presented in this field, the use of carotenoid supplementation and instruments such as the MacuScope (and the newer MPod) which monitor macular pigment density levels is difficult to rationalise.

Several long-term well designed



Lifestyle changes to help prevent AMD

- Quit smoking. Smoking can more than double the risk of developing AMD
- Eat a good, balanced diet. Lots of fresh fruit and vegetables particularly dark leafy greens. These include cabbage, kale, Brussels sprouts, spinach and broccoli (preferably steamed with a small amount of fat or oil, until tender, at a medium cooking temperature and chewing well is essential)
- Protect your eyes from sunlight. Wear sunglasses which have UV protection and have the EU quality standards 'CE' mark or wear a brimmed hat (especially post-cataract surgery patients)
- Exercise regularly. Cardiovascular exercise improves the body's overall health and increases the efficiency of the circulatory system
- Control body weight, cholesterol and blood pressure
- Supplements. When recommended dietary requirements cannot be met, for whatever reason (eg lifestyle, oral, digestion problems) consider seeking advice on supplementation via your GP practice
- Monitor your vision. Using the Amsler chart, check your eyes on a weekly basis
- Eye examinations. Have a sight test at least once every two years or more regularly if specified



randomised control trials are needed to make a true evaluation of supplementation effects on AMD. There are currently just such trials ongoing, such as the adapted AREDS (CAREDS), the trials based in Belfast and Waterford Ireland the Celtic Age-Related Maculopathy Arrestation (CARMA) and The Aston randomised control trial (RCT). The Aston double-masked randomised controlled trial, looks to determine the effect of 18 months of nutritional supplementation consisting of lutein, vitamin A, C and E, zinc and copper on measures of visual function in people with and without AMD. Data collection is undertaken for the ninth and 18th month, where fundus photography, distance VA, macular mapping test, glare recovery, colour vision and contrast sensitivity will be examined as indicators.

The Celtic Age-Related Maculopathy Arrestation study (CARMA) is a double-masked randomised control trial, investigating the beneficial role of antioxidants versus placebo in patients with ARM. The antioxidant preparation is known as 'Carmavite' and consists of lutein, zeaxanthin, vitamin C, E and zinc.

CARMA involves a pool of approxi-

mately 500 participants with two specific categories of ARM patients. Category 1 comprises patients with CNV or GA in one eye with any level of ARM in the other; category 2 includes patients with severe ARM in at least one eye. Patients will be called back every six months for one year and examinations will be carried out including distance VA, contrast sensitivity fundus photography and a general physical examination.

CAREDS is an observational study which is an ancillary study to the Women's Health Initiative. CAREDS has two main objectives: to investigate if women in the WHI observational study with sustained dietary intake of lutein in the lowest versus highest quintiles have a lower density of macular pigment or a higher prevalence or early ARM and to identify dietary, lifestyle, health and physiological determinants of macular pigment density in women. CAREDS participants consumed nutritional supplements, high dose antioxidants, high dose zinc and multivitamins; 48 per cent of subjects took supplements with lutein.

CAREDS is an essential study in providing knowledge on the relationship between long-term supplement

use and their effects on the AMD. The report of these large-scale trials and the completion of others like it will aid practitioners to give specific advice to their patients.

The decision to take supplementation is at the patient's own discretion, and advice on the topic should be gained from the eye care practitioner if, for whatever reason, the recommended nutritional intake cannot be met. On the basis of this dissertation it is plausible to advise a healthy, well balanced diet with fresh fruits and vegetables rich in carotenoids and antioxidants (eg corn, Brussels sprouts, collard greens) to AMD sufferers and those at risk of AMD.

Recommendation on other risk factors can also be made such as stop smoking, wear UV protective lenses or a brimmed hat when outdoors, control body weight, cholesterol, blood pressure, exercise regularly and have regular eye examinations at least once every two years.

The panel opposite is a summary of the advice offered on a card to attendees at the City University Visual Impairment Clinic. ●

● **Gary Chung** is now a fully qualified optometrist working in Northampton

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