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their vision. Years may go by before they consult an eye doctor. In other cases, the deterioration is very rapid and can appear to occur overnight.

Diagnosis

The diagnosis is usually made when an ophthalmologist, examining a patient, sees abnormalities that suggest possible ARMD. Abnormalities include deposits on the retina, called drusen or the presence of abnormal blood vessels or 'leakage'. An ophthalmologist must perform a test called fluorescein angiogram. This involves injecting a dye into the patient's arm. The dye travels quickly through the body.

When it reaches the back of the eye, a rapid sequence of photographs of the retina is taken. These photographs show changes in the retina and where the abnormal blood vessels are located. Additional tests like OCT may also be useful.

Amsler Grid Testing

The first line of defense for macular degeneration is awareness. A simple test of your vision will alert you to any changes that may indicate a problem with macular degeneration or a

Seniors should refrain from smoking and alcohol while opting for a nutritionally balanced diet and regular exercise

AGE-RELATED macular degeneration (ARMD) is the leading cause of blindness in developed countries. In South India, the prevalence is around 1.1 per cent. However, its incidence depends on an individual's age. The neovascular or 'wet' form of the disease is responsible for most cases of (90 per cent) severe loss of vision. The average age of patients with this form of macular degeneration is mid seventies. It rarely occurs before the age of 50. Wet macular degeneration is more common among caucasians (whites), but occurs in all races.

Socio-economic implications of ARMD Since ARMD results in loss or impaired central vision, it is not surprising that majority of the patients either become partially or fully blind. Activities which require good central vision such as reading, writing and carrying out certain domestic tasks are affected.

Many macular degeneration patients require help to perform activities of daily living. Sometimes, their visual handicap necessitates admission to a nursing home. The social cost of this handicap is enormous in both personal and social terms. When both eyes are affected, the quality of life too, is compromised.

Types of ARMD

There are two types of age related macular degeneration. One form is



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cessful when performed before damage occurs. Since dry ARMD can lead to development of wet ARMD, most patients should use the Amsler Grid.

Treatment options

Treatment modalities presently available are mainly intended to 'save' the existing visual acuity. There are no methods to reverse the process and regain the lost vision.

Treatment for Dry ARMD

There is no treatment currently for dry macular degeneration. Vitamins may make a difference for those with intermediate dry ARMD.

Role of nutrition

Recent research, focussed on changes in the retina, indicate that the progress of ARMD could be slowed if the patients were treated with appropriate dietary supplements. Since moderate intake of vitamins is not harmful, many physicians offer patients the option of taking them in case they may prove helpful.

How antioxidants help

Research shows that metabolic activities within cells can produce highly reactive oxygen derivatives known as



Vision loss: A major handicap

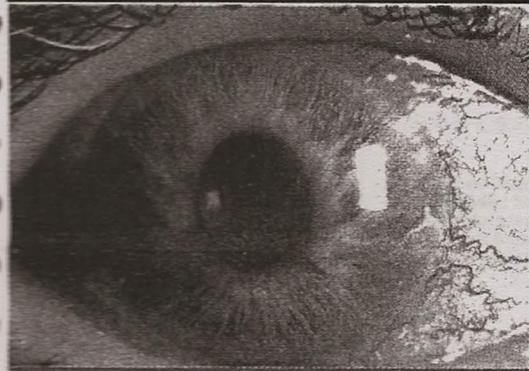
radical scavengers' by converting the free radicals into stable compounds before they interact with cell membranes to wreck havoc. When the amount of free radicals in the body exceeds the capacity of the scavengers, aging and injurious processes begin. This degeneration is called oxidative stress.

Beneficial antioxidants include vitamins E, C, and A, phytochemicals like carotenoids and xanthophylls, especially lutein and zeaxanthin, assorted minerals and vitamins including selenium, zinc, magnesium, glutathione, vitamin B6 and folic acid enzymes involved in the oxidative process.

Sources of vitamins and minerals

Vitamin A is found in liver, egg yolk, fortified milk, dairy products, margarine, fish oil. Beta-Carotene can be had from carrots, sweet potatoes, spinach and other dark green leafy vegetables, cantaloupes and apricots. Vitamin C is present in citrus fruits, melons, berries, peppers, potatoes, cabbage, broccoli, tomatoes and

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known as 'wet' and the other is 'dry'. It is possible to experience both forms at the same time, in one or both eyes. It is not uncommon for a patient with the dry form to develop the wet form of ARMD, later on.

The onset and progression of either type does not follow any particular pattern. In its earliest stages, ARMD can be difficult to diagnose. Sometimes it progresses so slowly that people do not notice a change in

worsening of your condition. This common test is known as the Amsler Grid. The Amsler Grid looks like graph paper, with dark lines forming a square grid. One of the first signs of macular degeneration can be wavy, broken or distorted lines or a blurred or missing area of vision.

The Amsler Grid can help you spot these early. Early detection of wet ARMD is critical because laser treatment, when indicated, is most suc-

Laser Treatment for Wet ARMD

A small number of people suffering from the 'wet' form of macular degeneration 10-15 per cent can be helped by laser treatment. However, even for this relatively small group, it does not restore lost vision. In suitable candidates, laser treatment seals the abnormal leaking blood vessels in the retina and discourages their growth.

In about half of these cases, however, the aging process may cause new blood vessels to grow in nearby areas. This suggests that perhaps, half of these patients may require additional laser treatment at some time in the future. Nevertheless, it should be noted that abnormal vessels, if untreated, will continue to grow and to leak, causing vision loss.

Photodynamic Therapy (PDT) for Wet ARMD

PDT is being used to treat selected patients with wet ARMD. The benefit of Photodynamic Therapy (PDT) is that it does not destroy the adjacent cells like conventional laser treatment. The major disadvantage, though, is the cost of the treatment, which may be around Rs 1 lakh per sitting.

free radicals or unstable oxygen that the body needs to fight infections and stop inflammation. These free radicals also react with and damage the 'innocent molecules' like DNA, proteins, lipids, and carbohydrates.

To counteract this oxidative process, our bodies produce 'free

ARMD risk factors out of your control

Age ARMD signs are present in about 14 per cent of people between 55 and 64 year age, 20 per cent between 65 and 75 and up to 37 per cent over 75.

Gender It is more common in women than in men. This may be partially explained by the fact that women live longer than men.

Severe Myopia (Farsightedness) Many people are farsighted and need glasses to see objects that are near. Severe hyperopia is not common and is related to a strong distortion of the shape of the eye. This may have an effect on the retina.

ARMD in one eye If you already have ARMD in one eye, the risk of developing it in the other eye is higher. Dry ARMD in one eye may predispose you to wet ARMD in the other.

Genetics If others in your family have macular degeneration, you have a greater risk of developing it.

Race It is more common in caucasians than other races. This may be partially due to the pigment in the eye or eye colour.

Eye Colour It is more common in people with blue eyes. This may be related to damage associated with exposure to ultraviolet light. Blue eyed people may have less protective pigment in their eyes.