Netcare Waterfall City Hospital

MACULAR DEGENERATION

By Dr Rajen Pillay, an ophthalmologist practising at Netcare Waterfall City Hospital

Dr Rajen Pillay

"If I have one message, I would urge people to go and get their eyes tested regularly in order to help detect any sight problems. It's very sad to see people accepting sight loss where there are treatments. There is some fantastic research taking place, and with more funding and further research, many more conditions will become curable, and sight loss may become a thing of the past."

Belinda – diagnosed with Age-related Macular Degeneration (AMD) in 2010

Normal vision

Vision with damaged macula

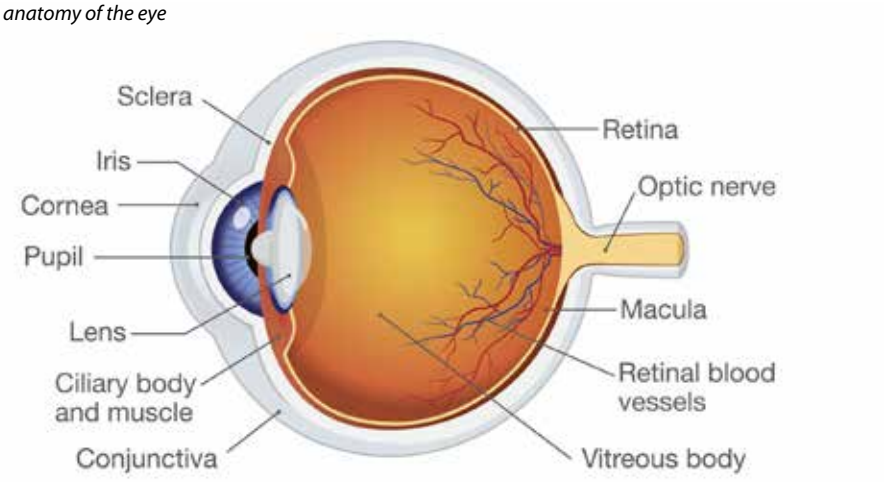
IMAGE BY THE NATIONAL INSTITUTES OF HEALTH, USA – https://commons.wikimedia.org

Age-related macular degeneration (AMD), is a common condition that affects vision in elderly individuals. In 2020, it was estimated that 196 million people were living with AMD worldwide (ref: 9 Visiqq).

WHAT IS MACULAR DEGENERATION?

Macular degeneration is a leading cause of vision loss and blindness in people over 50 years and is the most common reason for blind registration in the western world. The condition affects both eyes and causes vision loss due to

The anatomy of the eye



damage to the macula, a small area located in the centre of the retina.

The retina is the thin layer of light-sensitive tissue lining the back of the eye. The macula is extremely important as it is responsible for seeing fine details clearly. Patients with AMD lose the ability to see fine details, both near and in the distance. For example, a person with AMD will look at a clock and see the outline of the clock but will be unable to tell the time.

HOW VISION WORKS

To understand how AMD affects vision, it is helpful to understand how the eye works. Vision occurs when light enters the eye through the pupil. The cornea and lens in the front of the eye focus light onto the retina at the back of the eye. The retina is a light-sensitive layer that lines the interior of the eye and is made up of millions of specialised cells called rods and cones. The macula is a small yellow spot in the centre of the retina where the majority of cone cells are situated. This small area of the retina is critical for sharp, detailed central vision. The image focused on the macula is converted to electrical impulses, and the optic nerve carries these impulses to the brain, where they are processed.

DIFFERENT TYPES OF AMD

1. Dry AMD

This is the most common type of macular degeneration, and about 80% of people with AMD have the dry type. Dry AMD occurs when parts of the macula get thinner with age and small, yellow clumps of protein, called drusen, grow in the macula. Patients complain of a slow, gradual loss of central vision, but peripheral (side) vision remains intact. While there is no treatment, early detection, lifestyle changes and vitamin supplements can slow down the progression of the disease. All macular degeneration begins as 'dry', but 10 – 15% of patients with dry AMD progress to 'wet' AMD.

2. Wet AMD

Wet AMD is less common but far more serious. This form of AMD happens when there is too much of a substance called vascular endothelial growth factor (VEGF) in the eye and this substance causes the growth of abnormal blood vessels under the macula. As a result, these abnormal blood vessels bleed and leak fluids into the macula and cause a painless but rapid loss of central vision. There is blurring and severe distortion of vision when looking straight ahead. Wet AMD typically affects one eye first but may eventually affect both eyes.

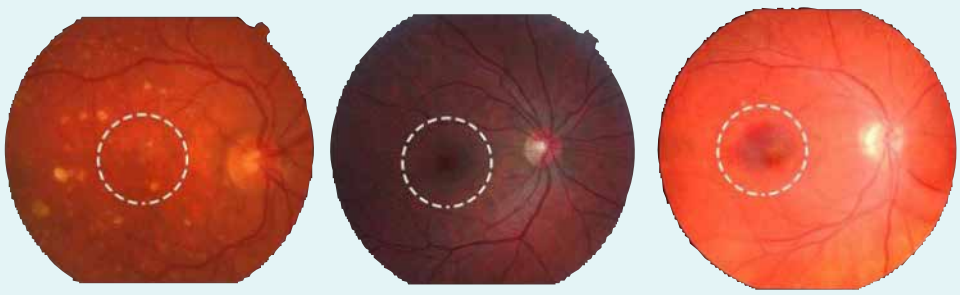
Vision is lost much faster than with dry AMD. Eventually, the bleeding and subsequent scarring of the macula may lead to severe and permanent loss of central vision. However, in most cases, the peripheral vision is spared and there is no risk of going completely blind in the eye. Treatment includes lifestyle changes, sun protection, vitamin supplements and anti-VEGF injections.

WHO IS AT RISK?

You are more likely to develop AMD if there are one or more of the following factors present:

- You are over 50 years
- Caucasian
- Have a family history of AMD
- Smoke cigarettes or are exposed to passive smoke

Age-related Macular Degeneration



Dry AMD (without bleeding)

Normal healthy macula

Wet AMD (with bleeding)

IMAGE BY HTTPS://OPHTHALMOLOGYBREAKINGNEWS.COM/

- You are overweight
- You have hypertension or heart disease
- You eat a diet high in saturated foods

WHAT ARE THE SYMPTOMS?

- Blurry or distorted areas in your central vision (often the earliest sign)
- Dark or 'empty' areas in the middle of your vision
- Straight lines appear wavy or distorted
- Objects appear smaller or the wrong size
- Decreased intensity or brightness of colours
- Difficulty with daily activities like reading, driving, watching TV, or recognising faces

HOW IS AMD DIAGNOSED?

It is important to have regular eye examinations by your optometrist or ophthalmologist (eye specialist) to identify early signs of eye disease. Retinal conditions like AMD have a much better long-term prognosis if identified and managed early in the development of the disease.

Your ophthalmologist will do a detailed and thorough examination of the whole eye to look for any abnormalities. Dilating drops will be instilled into your eyes to widen the pupils so the ophthalmologist can examine the retina in detail. Special tests will also be done to accurately investigate any signs or symptoms of retinal disease.

The following tests may be done to determine the extent of the disease:

- Vision charts such as visual acuity charts and Amsler-grid charts will be used to determine eye function.
- A detailed clinical examination will be done, using special lenses to examine the retina.
- Optical Coherence Tomography (OCT) is a commonly used technique to accurately provide excellent retinal images. This test will give accurate cross-sectional images of the macula to determine the extent of the AMD and the response to treatment.
- Fluorescein angiography may be required, whereby a special dye is injected into an arm vein. This makes blood vessels on the retina glow brightly under a special light. Photographic images are then taken of the retina.

HOW IS WET AMD TREATED?

The main goal of treatment in AMD is to stop or slow disease progression and, if possible, restore or improve vision.

- **Anti-VEGF injections:** As mentioned, a substance called vascular endothelial growth factor (VEGF) causes the growth of abnormal blood vessels in the eyes in wet AMD. Anti-VEGF medication binds to VEGF and prevents further damage to the eye. For this medication to be effective on the retina, it must be given by intra-ocular injection and these injections need to be repeated monthly initially and then several times per year.

- **Lifestyle changes:** Your ophthalmologist will speak to you about risk factors such as smoking, hypertension, obesity, and poor diet. You will be advised to exercise regularly and to eat more leafy vegetables, fish, wholegrain foods and nuts. In addition, sunglasses will be prescribed to protect your eyes against the harmful spectrum of sunlight.

- **Vitamins:** You may be prescribed a daily high-dose supplement containing vitamins and antioxidants, shown in clinical trials to slow down the disease progression.

HOW DO I LIVE WITH AMD?

- AMD primarily affects your central vision. You will learn to rely more on your peripheral vision (edge of your vision) to remain functional.
- Brighter lighting in the home will help with navigation around the house and doing daily chores.
- Low vision aids, such as stronger glasses and magnifiers, will help with reading.
- There is computer software that can enlarge text and, if necessary, read it out to you.

Useful online sources:

www.keepeyesinsight.co.za,
www.aao.org/eye-health,
www.moorfields.nhs.uk

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