CONDITION

Macular degeneration

Macular degeneration is an eye condition that gradually damages sharp central vision, usually in older adults.

WHAT IT IS
Damage to the central part of the retina

BODY SYSTEM
Eyes and vision

MAIN SYMPTOMS
Blurred central vision, distortion, dark patches, reduced detail

WHAT CAUSES IT
Age-related retinal damage influenced by genes and smoking

HOW IT IS DIAGNOSED
Dilated eye examination and retinal imaging

MAIN TREATMENT
Monitoring, eye injections, or selected nutritional supplements

CAN IT BE CURED?
No, but treatment can limit progression

IS IT AN EMERGENCY?
Sometimes, with sudden central vision changes

LONG-TERM OUTLOOK
Peripheral vision usually remains despite central vision loss

Overview

Macular degeneration damages the macula, the small central part of the retina at the back of the eye. The retina changes light into signals that travel to your brain. The macula provides the detailed central vision needed for reading, recognizing faces, driving, and seeing fine details.

Most cases are age-related macular degeneration , often shortened to AMD. It usually affects people over 50, although other, less common conditions can also damage the macula.

AMD does not normally affect peripheral, or side, vision. It therefore does not usually cause complete blindness. However, advanced AMD in both eyes can make everyday tasks much harder and may meet the definition of severe sight impairment.

There are two main forms:

Some people with dry AMD develop geographic atrophy , an advanced form in which defined areas of retinal cells waste away. Dry AMD can also change into wet AMD.

- Dry AMD is the more common form. Cells in the macula gradually become damaged and may be lost.
- Wet AMD develops when abnormal blood vessels grow beneath the retina and leak blood or fluid. It can cause faster changes in vision.

Symptoms

Early AMD may cause no noticeable symptoms. Changes may be found during a routine eye examination before you are aware of a problem.

Symptoms can affect one or both eyes. If only one eye is affected, the other eye may compensate, making the change difficult to notice.

Possible symptoms include:

AMD does not usually cause eye pain or redness.

New distortion, a new central patch, or a sudden drop in vision may be a sign of wet AMD. These symptoms need urgent assessment because treatment is most useful when started promptly.

- Blurred or less detailed central vision
- Straight lines appearing bent, wavy, or broken
- A smudged, dim, or blank patch near the centre of vision
- Difficulty reading, even with usual glasses
- Needing brighter light for close work
- Colours appearing less bright
- Difficulty recognizing faces
- Slower adjustment when moving between bright and dim places

Causes and risk factors

AMD results from damage to the macula over time. Its exact cause is not fully understood. Age-related changes, inherited differences in certain genes, inflammation, and environmental factors all appear to contribute.

Small deposits called drusen can collect beneath the retina. Drusen are common with ageing, but larger or more numerous drusen can be a sign of AMD. Their presence does not automatically mean that severe sight loss will develop.

The chance of AMD increases with age. Other established or suspected risk factors include:

AMD is more often diagnosed in White populations, although people from any ethnic background can develop it. Risk statistics do not predict what will happen to one person.

Smoking is the most important modifiable risk factor. It can also affect which nutritional supplements are suitable.

- Smoking, including past smoking
- A close family history of AMD
- Certain inherited genetic differences
- Cardiovascular risk factors, such as high blood pressure
- Having AMD in the other eye

Diagnosis

An optometrist or ophthalmologist can assess you for AMD. An ophthalmologist is a medical doctor who specializes in eye conditions.

The examination usually includes a vision test and a dilated eye examination. Dilating drops widen the pupils so the retina can be examined. The drops may temporarily blur your near vision and make your eyes sensitive to light.

Optical coherence tomography , or OCT, is commonly used. This painless scan uses light to create detailed cross-sectional images of the retina. It can show thinning, fluid, or swelling and help distinguish dry AMD from wet AMD.

Other tests may include retinal photographs. If leaking blood vessels are suspected, dye-based imaging called fluorescein angiography may be used. A dye is injected into a vein, and photographs track it through the retinal blood vessels.

An Amsler grid is a pattern of straight lines used to check for distortion. It can help you notice changes between appointments, but it cannot confirm or rule out AMD.

Treatment and management

Treatment depends on the type and stage of AMD. It aims to preserve useful vision, slow

further damage, and help you make the best use of remaining sight. Existing retinal damage often cannot be reversed.

Early dry AMD is usually monitored with regular eye examinations. There is no treatment that removes drusen or restores damaged macular cells.

A specific combination of antioxidant vitamins and minerals, based on the Age-Related Eye Disease Studies, may reduce the chance of progression in some people with intermediate AMD or advanced AMD in one eye. It does not prevent AMD in people who do not have it, and it is not suitable for every stage.

Ask an eye professional whether an AREDS2-type supplement is appropriate before taking one. These products are different from ordinary multivitamins. Formulations containing beta-carotene are generally avoided by people who smoke or previously smoked because beta-carotene supplements have been linked to a higher risk of lung cancer in these groups.

Wet AMD is usually treated with injections of anti-VEGF medicine into the eye. VEGF is a substance that encourages abnormal blood vessel growth. Blocking it can reduce leakage and swelling. Treatment can stabilize vision and sometimes improve it, but results differ.

The eye is numbed before an injection. You may need repeated injections and OCT scans, with the timing based on how the eye responds. Mild irritation or a small blood spot on the white of the eye can occur. Serious complications, such as infection inside the eye or retinal detachment, are uncommon but need urgent treatment.

Photodynamic therapy, which uses a light-activated medicine, is now used less often but may be considered in selected cases.

In some countries, eye injections that target part of the immune system called the complement pathway are available for geographic atrophy. They may slow the growth of damaged areas, but they do not restore lost vision. They also require repeated treatment and have potential eye-related risks.

Low-vision rehabilitation can help at any stage when sight affects daily life. Options include magnifiers, stronger lighting, electronic reading tools, large-print materials, screen readers, and training in safer ways to manage tasks.

Complications

The main complication is permanent loss of detailed central vision. This can affect reading, driving, cooking, handling money, and recognizing faces. Driving eligibility depends on your measured vision and local licensing rules.

AMD in one eye increases the chance of changes in the other eye. Dry AMD may progress to geographic atrophy or wet AMD, but this does not happen to everyone.

Reduced vision can increase the risk of falls, loss of independence, social isolation, anxiety, and depression. Vision rehabilitation, practical support, and mental health care can reduce these effects.

Some people with major sight loss see shapes, patterns, animals, or people that are not present. This is called Charles Bonnet syndrome . It happens because the brain is receiving less visual information. It is not, by itself, a sign of dementia or a mental health condition, but new hallucinations should still be discussed with a health professional.

Prevention

AMD cannot always be prevented. Age and inherited risk cannot be changed, and a healthy lifestyle does not guarantee protection.

Not smoking can lower risk. If you smoke, support with stopping is available through primary care, pharmacies, or local quit-smoking services.

A balanced diet that includes leafy green vegetables, fruit, fish, and other sources of nutrients supports general and eye health. Regular physical activity and management of blood pressure and cardiovascular health may also be helpful.

Protecting your eyes from strong sunlight with sunglasses that block ultraviolet light is sensible for overall eye health, although it has not been proven to prevent AMD.

Do not take high-dose eye supplements simply to prevent AMD. AREDS2-type supplements are intended for particular stages and should be discussed with an eye professional.

Regular sight tests can identify changes before you notice them. How often you need testing is based on your age, eye findings, family history, and local recommendations.

Living with it and what to expect

AMD has a different course from person to person. Early dry AMD may remain stable for years or progress gradually. Geographic atrophy generally enlarges over time. Wet AMD may change vision more quickly, but treatment often controls leaking blood vessels while it continues.

Neither type usually removes peripheral vision. You may still move around familiar places and see objects to the side, even if reading or recognizing faces becomes difficult. Learning to look slightly away from an object can sometimes help you use a healthier area of retina.

Regular follow-up allows your eye team to compare scans and vision tests over time. Keep these appointments even if your vision seems unchanged. If you have been given an Amsler grid, use it as instructed and test one eye at a time while wearing your reading glasses.

Practical changes can make daily tasks easier. Brighter, directed lighting and high-contrast labels may help. Phones, tablets, and computers can enlarge text, read words aloud, and accept voice commands. Low-vision services can assess your goals and recommend equipment rather than expecting you to choose tools alone.

You may need to stop driving if your vision no longer meets legal standards. This can be a major adjustment. Transport planning, occupational therapy, and sight-loss organizations can help you remain active and independent.

When to get medical help

Arrange a routine eye examination if reading is becoming harder, colours seem duller, or your central vision has gradually become less clear. Also attend your planned monitoring visits if you already have AMD.

Seek urgent assessment from an eye service if you notice:

These changes may indicate wet AMD and should not wait for a routine appointment.

Seek emergency eye care for sudden severe vision loss, a dark curtain across the vision, many new floaters or flashing lights, or severe eye pain. After an eye injection, urgent warning signs include worsening pain, increasing redness, marked light sensitivity, or rapidly worsening vision.

Call emergency services for vision loss accompanied by facial drooping, arm weakness, difficulty speaking, severe dizziness, or a sudden severe headache. These can be signs of a stroke or another neurological emergency.

- New waviness or bending of straight lines
- A new blurred, grey, or blank patch in central vision
- A sudden decline in vision in either eye
- A rapid change in the size or shape of objects

Common questions

Can glasses fix macular degeneration?

Glasses can correct short-sightedness, long-sightedness, or astigmatism, but they cannot repair the macula. Updated glasses may still improve the vision available to you. Magnifiers and other low-vision tools can provide additional help.

Will macular degeneration make me completely blind?

AMD damages central vision but usually leaves peripheral vision. Complete loss of all sight is therefore unusual. Advanced AMD in both eyes can still cause severe sight impairment and significantly affect daily activities.

Does dry macular degeneration always become wet?

No. Some dry AMD remains stable or progresses slowly without becoming wet. Some develops geographic atrophy, while some changes to wet AMD. Regular monitoring helps identify either form of progression.

Can wet macular degeneration be cured with injections?

Anti-VEGF injections control abnormal blood vessel leakage rather than cure the underlying condition. They often preserve vision and may improve it, but repeated monitoring and treatment are commonly needed.

What does an Amsler grid look like if AMD is getting worse?

Lines may look wavy, broken, blurred, or missing, or a new dark patch may appear. Check each eye separately. A new change needs urgent eye assessment even if the other eye seems normal.

Can I still drive with macular degeneration?

Some people with early AMD can continue driving if they meet local legal vision standards. Advanced central vision loss may make driving unsafe or unlawful. A formal vision test is needed; an AMD diagnosis alone does not decide eligibility.

Sources

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