



LEVEL 3 DIPLOMA

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MEDICAL SCIENCE UNIT 6 (Medical Conditions)

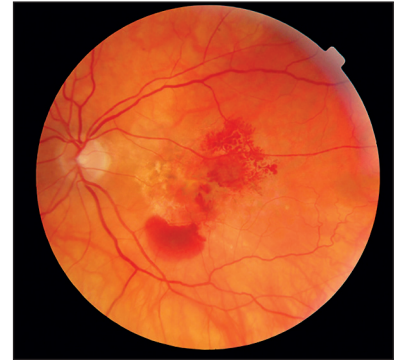
For use with **Unit 6: Medical Case Study** examination

**Pre-Release Article for use in the following
examination on Monday, 5 June 2023**

Level 3 Diploma in Medical Science

Age-Related Macular Degeneration

Age-related macular degeneration (AMD) is a common eye condition that usually affects people in their 50s and 60s. This can happen gradually or over several years (dry AMD), or quickly over a few weeks or months (wet AMD).



Symptoms of AMD

AMD affects the middle part of a patient's vision, not the edges (peripheral vision). It can be present in one eye or both. AMD can make things like reading, watching TV, driving or recognising faces difficult.

Other symptoms include:

- seeing straight lines as wavy or crooked
- objects looking smaller than normal
- colours seeming less bright than they used to
- seeing things that aren't there (hallucinations)

AMD isn't painful and doesn't affect the appearance of the eyes.

Causes of AMD

The causes of AMD are unknown. In a patient with AMD the blood vessels of the retina become more permeable or 'leaky'. There is over-production of a protein called vascular endothelial growth factor (VEGF), which increases the permeability of blood vessels and encourages the growth of new blood vessels. New blood vessels and leaky blood vessels can cause retinal damage.

Certain factors increase the risk of a patient developing AMD. These include:

- increasing age
- family history
- smoking
- cardiovascular diseases

Diagnosing AMD

If a GP suspects AMD, they will refer a patient to an optometrist. The optometrist will examine the eye and check a patient's vision using different lenses and a reading chart. During the examination, the optometrist may put drops in the eyes containing a drug called tropicamide. They may also perform tonometry. Sometimes patients are referred to an ophthalmologist. This is necessary if there is a possibility that treatment is needed quickly or other tests, such as an angiographic test of the eye, are required.

Treatments for AMD

Dry AMD – there is no treatment, but vision aids can help reduce the effect of AMD.

Wet AMD – the treatment does not cure the condition but aims to slow its progression. Regular intraocular injections with anti-VEGF drugs, for example ranibizumab can be given. An alternative treatment using light pulses, called photodynamic therapy, may also be used to stop the patient's vision getting worse.

Living with AMD

An eye specialist will also refer a patient with AMD to a low-vision clinic. The clinic gives useful advice and practical support for patients with AMD.

Kidney Stones

Kidney stones can develop in one or both kidneys, and most often affect people over the age of 30.

Symptoms of kidney stones

Very small kidney stones may go undetected and pass out painlessly when a patient urinates. Larger kidney stones can cause symptoms, including:

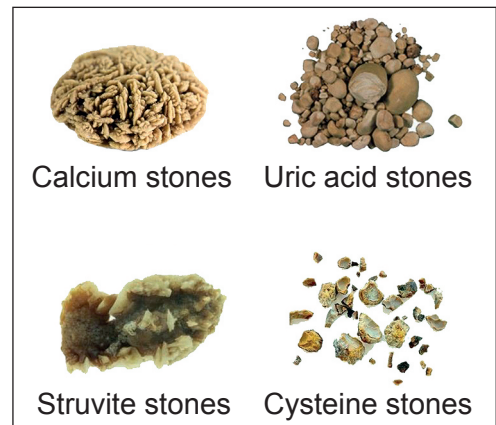
- pain in the side of the abdomen or groin
- high temperature
- severe abdominal pain that comes and goes
- feeling sick or vomiting
- urine infection, often with blood in the urine

A kidney stone can block the ureter and cause a kidney infection. This is because waste products are unable to pass the blockage, which may cause a build-up of bacteria.

Causes of kidney stones

The risk of developing kidney stones is increased when a patient does not drink enough fluid. Kidney stones come in a variety of sizes, shapes and colours. Some are like grains of sand, whilst in rare cases others can grow to the size of a golf ball. The main types of kidney stones are:

- calcium stones, the most common type of stone
- struvite stones, usually caused by an infection
- uric acid stones, often found in the bladder and can be caused by certain foods
- cysteine stones



Diagnosing kidney stones

A GP will usually be able to diagnose kidney stones from a patient's symptoms and medical history. Diagnostic tests include:

- simple urine samples using a dipstick to check for substances in the urine including glucose, protein and ions
- simple and complex urodynamic studies like measuring the compliance of the bladder.
- an examination of any stones that are passed
- blood tests to check that the kidneys are working properly, measuring ADH concentration in the blood and the levels of substances that could cause kidney stones

Treating kidney stones

Most kidney stones are small enough to be passed out in the urine and can be treated at home. To ease the symptoms, a GP might recommend:

- drinking plenty of fluids throughout the day
- over-the-counter painkillers, like ibuprofen
- an alpha-blocker such as tamsulosin which helps the stones to pass

Preventing kidney stones

The best way to prevent kidney stones is to drink plenty of water each day to avoid dehydration. To prevent stones returning, three litres of fluid should be drunk throughout the day.

Leptospirosis (Weil's disease)

Leptospirosis is an infection that is caught indirectly from animals, most commonly rats, mice, cows, pigs and dogs. It is one of the most common infections in the world, particularly in areas like the Caribbean, Latin America, and the Indian subcontinent where the water is warmer.

Symptoms of leptospirosis

The most common symptom is a fever. Other symptoms include:

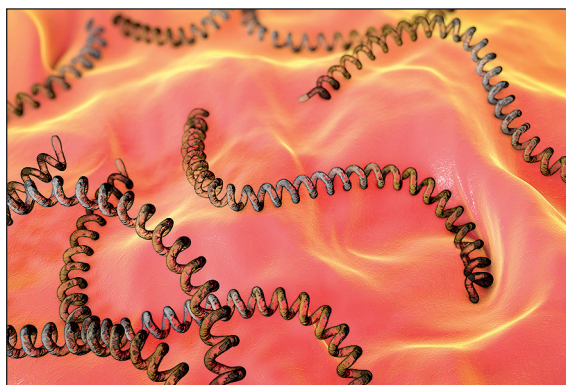
- headache
- nausea and vomiting
- aching muscles and joints
- red eyes
- loss of appetite

Severe leptospirosis can cause multiple organ failure and death.

Causes of leptospirosis

Leptospirosis is a bacterial infection caused by gram-negative bacteria of the genus *Leptospira*. The most common way to catch leptospirosis is from exposure to contaminated freshwater or soil. This usually means infected urine gets into the patient's mouth, eyes, or a cut. This can happen during activities like kayaking, outdoor swimming, or fishing.

Less commonly, infection can occur when working with animals or animal parts, or in occupations where people are in contact with contaminated water. It is relatively rare in the UK, but it has been increasing in holiday-makers.



Diagnosing leptospirosis

A GP will diagnose leptospirosis after considering the symptoms shown by the patient and the risk of exposure of the patient to contaminated water supplies. It is a notifiable disease and blood samples are sent to the National Leptospirosis Service (NLS) to confirm the diagnosis. The diagnosis is confirmed by one of the following:

- testing for *Leptospira* DNA
- ELISA
- microbiological culture of the *Leptospira* bacteria

Treating leptospirosis

A GP may prescribe antibiotics such as doxycycline or penicillin. Usually, a full recovery is seen in a few days or weeks. Over-the-counter painkillers may be taken to relieve the fever. If a more serious infection is present, intravenous antibiotics may be required, which are usually administered in hospital.

Preventing leptospirosis

To prevent infection it is advisable that the following procedures are followed:

- wash hands with soap and water after handling animals or animal products
- clean any wounds as soon as possible and cover cuts and grazes
- do not touch dead animals with bare hands
- do not drink untreated water from rivers, canals or lakes.