CONDITION

Endocarditis

Endocarditis is a serious infection of the heart's inner lining, usually affecting its valves.

WHAT IT IS
Infection of the heart's inner lining, usually its valves

BODY SYSTEM
Heart and circulation

MAIN SYMPTOMS
Fever, chills, fatigue, shortness of breath

WHAT CAUSES IT
Infection, usually bacteria and sometimes fungi

HOW IT IS DIAGNOSED
Blood cultures and heart ultrasound

MAIN TREATMENT
Intravenous antimicrobials, sometimes heart valve surgery

CAN IT BE CURED?
Sometimes - infection clears; damage may remain

IS IT AN EMERGENCY?
Yes - suspected infection needs urgent hospital assessment

LONG-TERM OUTLOOK
Recovery is possible, but valve damage and recurrence can occur

Overview

Endocarditis is inflammation of the heart's inner lining. It usually affects the heart valves, which control blood flow through the heart.

Infective endocarditis develops when bacteria, or less often fungi, enter the bloodstream and settle on a valve or another damaged area. Rarely, non-infective endocarditis occurs when blood clots form on valves without infection, often because of another serious condition.

Infective endocarditis can damage a valve, disrupt the heart's pumping action or release infected material into the bloodstream. This material can travel to the brain, lungs or other organs.

Some cases develop suddenly over several days. Others progress over weeks or months and may resemble another illness. Prompt assessment and treatment improve the chance of

controlling the infection and limiting heart damage.

Symptoms

Fever is common, but symptoms vary. Older adults, people with weakened immune systems and those who have taken antibiotics like amoxicillin or doxycycline may have little or no fever.

Possible symptoms include:

A clinician may hear a new heart murmur, an unusual sound caused by blood moving through the heart. A murmur does not always mean endocarditis is present.

Small blood spots may appear under the fingernails, on the skin, in the whites of the eyes or inside the mouth. Painful lumps on fingers or toes and painless marks on the palms or soles are classic but uncommon signs.

Symptoms may also result from infected material travelling from the heart. Sudden one-sided weakness, difficulty speaking or loss of vision can indicate a stroke. Chest pain, severe breathlessness or coughing up blood may occur if the lungs are affected.

- Fever, chills or night sweats
- Unusual tiredness or weakness
- Shortness of breath
- Aching muscles or joints
- Reduced appetite or unplanned weight loss
- A fast heartbeat
- Persistent cough
- Headache, confusion or feeling very unwell

Causes and risk factors

Endocarditis usually starts when bacteria enter the bloodstream from the mouth, skin, bowel, urinary tract or an infected medical device. Often, no single cause is identified.

A healthy heart lining generally resists infection. Risk is higher when germs can attach to an abnormal surface or implanted material.

Risk factors include:

Dental procedures can briefly allow mouth bacteria into the blood. Everyday chewing and

brushing can do the same, particularly when gums are inflamed. Most people who have dental treatment do not develop endocarditis.

Endocarditis is not caused by stress, exercise or ordinary contact with someone who has it.

- Previous infective endocarditis
- An artificial valve or material used to repair one
- Certain heart valve conditions
- Some congenital heart conditions
- An implanted heart device, such as a pacemaker
- Injecting drugs with shared or non-sterile equipment
- Long-term intravenous lines or repeated bloodstream access
- Haemodialysis
- A weakened immune system

Diagnosis

Symptoms alone cannot confirm endocarditis. Diagnosis usually combines blood cultures, heart imaging, examination and medical history.

Blood cultures test for bacteria or fungi. Several samples are usually collected from different sites, ideally before antibiotics begin when it is safe to wait. Identifying the organism guides treatment.

An echocardiogram uses sound waves to produce images of the heart. The first scan is usually performed through the chest. If images are unclear or suspicion remains high, a transoesophageal echocardiogram may be needed. After sedation and throat numbing, a thin ultrasound probe is passed down the food pipe to provide a closer view of the valves.

Other blood tests may show inflammation, anaemia or kidney changes but do not prove endocarditis. CT, MRI or nuclear imaging may check for valve complications, infection around an artificial valve or problems in other organs.

Cultures can remain negative after antibiotics or when an organism is difficult to grow. Further laboratory tests may then be required.

Treatment and management

Infective endocarditis is usually treated in hospital initially by specialists in heart disease, infection, imaging and, when needed, heart surgery.

Antibiotics are given into a vein. Treatment may initially cover several likely bacteria, then change when cultures identify the organism. Fungal endocarditis requires antifungal medicines. Treatment commonly lasts several weeks because organisms attached to valves are difficult to remove.

Blood cultures are repeated to confirm that the bloodstream infection has cleared. Blood tests monitor inflammation, kidney function and treatment side effects. Further heart imaging may be needed.

Some people can complete treatment outside hospital once stable, provided planned monitoring and reliable access to the treatment service are available.

Heart surgery may be considered when:

Surgery may repair or replace a valve and remove infected tissue. An infected implanted device may also need removal. Not everyone needs an operation.

Medicines that prevent blood clots do not remove infected valve material. If you already take one, the hospital team may review it because endocarditis and stroke affect bleeding and clotting risks. Do not stop prescribed medicine without medical advice.

- Valve damage causes heart failure
- Antimicrobial treatment cannot control the infection
- An abscess develops around a valve
- Large infected growths may break away
- An artificial valve or heart device is involved

Complications

Endocarditis can cause complications during or after the infection.

Valve tissue may become scarred, torn or leaky. Severe damage can cause heart failure, in which the heart cannot pump effectively enough.

Infected material can break away and block a blood vessel, known as an embolism. It may cause a stroke, lung problems, reduced blood supply to an organ or infection elsewhere.

Other complications include:

Endocarditis can be life-threatening, especially if diagnosis is delayed or an artificial valve is involved. Risk depends on the organism, valve damage, other health conditions and response

to treatment.

- An abscess in or around the heart
- An abnormal heart rhythm or electrical conduction problem
- Kidney inflammation or injury
- Infection in the brain, spine, spleen or another organ
- Sepsis, a dangerous whole-body response to infection
- Recurrent endocarditis

Prevention

Endocarditis cannot always be prevented because bacteria may enter the blood without an obvious infection or procedure.

Regular brushing, cleaning between the teeth and dental care help prevent gum disease. Seek dental care for pain, swelling, bleeding gums or infection rather than waiting for a routine appointment.

Preventive antibiotics before dental work are unnecessary for most people. Some countries recommend them for people at the highest risk of severe endocarditis who are having procedures involving the gums or tooth roots. Guidance varies by country and heart condition. Ask a heart or dental professional whether this applies to you.

Tell medical and dental teams if you have had endocarditis, have an artificial valve or carry an endocarditis alert card.

Avoid injecting non-prescribed drugs. If you inject, harm-reduction services can provide sterile equipment, testing and support without requiring you to stop first. Keep wounds clean and seek care for spreading redness, pus or fever.

Do not use leftover antibiotics to prevent endocarditis. They may not treat the responsible organism and can make blood cultures less useful.

Living with it and what to expect

Recovery may continue for weeks or months after the infection is controlled. Tiredness, reduced stamina and weakness can persist after a long hospital stay. Activity usually increases gradually according to heart function, surgery and general health.

Follow-up may include blood tests, repeat echocardiograms and appointments with heart and

infection specialists. These check for valve damage, treatment effects and returning infection.

Some people recover without major lasting effects. Others have a leaking or narrowed valve requiring long-term monitoring or later surgery. Stroke, organ injury or heart failure may require rehabilitation and ongoing care.

Endocarditis can return because the original infection was not fully cleared or a new infection develops. Keep a record of the organism, treatment and any valve surgery, and mention your history before future medical or dental procedures.

Attend follow-up even if you feel well. New fever or worsening illness should not wait for the next appointment.

When to get medical help

Endocarditis requires urgent assessment. Seek same-day medical advice for unexplained or persistent fever, chills, night sweats or increasing fatigue, especially if you have:

During treatment, promptly report returning fever, worsening breathlessness, new swelling or treatment side effects.

Call emergency services for:

Scheduled tests, heart scans and dental care are important but do not replace urgent assessment for new symptoms.

- Had endocarditis before
- An artificial valve or certain congenital heart conditions
- A recent bloodstream infection
- An implanted heart device or long-term intravenous line
- Recently injected drugs
- Sudden facial drooping, arm weakness or speech difficulty
- Severe difficulty breathing
- New severe chest pain
- Fainting, marked confusion or difficulty waking
- Coughing up blood
- A cold, painful or suddenly weak arm or leg

Common questions

Is endocarditis contagious?

Endocarditis does not spread from person to person. Ordinary contact with someone who has it will not give you the heart infection.

Can endocarditis be cured?

Antimicrobial treatment can clear many infections, and surgery can remove infected tissue or treat valve damage. Cure is not guaranteed, and valve or organ damage may remain.

How do you get endocarditis?

It develops when bacteria or, less often, fungi enter the blood and attach to the heart's lining. This is more likely with an abnormal valve, artificial material or bloodstream access.

Can dental work cause endocarditis?

Dental procedures can allow mouth bacteria into the blood, but endocarditis rarely results. Preventive antibiotics are reserved for selected people at highest risk under local guidance.

How long does recovery take?

Treatment usually lasts several weeks, while strength and stamina may take longer to return. Recovery depends on complications, valve damage, surgery, the organism and previous health.

Can endocarditis come back?

Yes. The original infection can return, or a new infection can develop. Future unexplained fever needs prompt assessment.

Sources

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