CONDITION

Septic arthritis

Septic arthritis is an infection inside a joint that can quickly damage cartilage and requires urgent treatment.

WHAT IT IS
Infection causing inflammation inside a joint

BODY SYSTEM
Joints and bones

MAIN SYMPTOMS
Sudden joint pain, swelling, warmth, reduced movement

WHAT CAUSES IT
Usually bacterial infection

HOW IT IS DIAGNOSED
Joint fluid testing and culture

MAIN TREATMENT
Urgent antibiotics and joint drainage

CAN IT BE CURED?
Yes - prompt treatment can clear infection

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

LONG-TERM OUTLOOK
Often good early; lasting joint damage can occur

Overview

Septic arthritis is an infection in the space inside a joint. It is also called infectious arthritis or purulent arthritis. "Purulent" means that pus may form in or around the joint.

Bacteria cause most cases. The infection leads to inflammation, swelling and a build-up of infected fluid. This can damage cartilage, the smooth tissue that helps the joint move. Infection may also spread into nearby bone or the bloodstream.

Septic arthritis most often affects one joint. The knee is commonly involved, but it can develop in the hip, shoulder, ankle, wrist or other joints. More than one joint can be affected, especially in people with certain long-term health conditions.

This condition needs urgent hospital assessment. Treatment usually involves antibiotics and

removal of infected joint fluid. Early treatment gives the joint the best chance of recovering.

Symptoms

Symptoms often begin quickly, over hours or a few days. They may be less obvious in babies, older adults and people whose immune systems do not work normally.

Typical symptoms include:

Not everyone develops a fever. A joint may also be infected without looking very red, particularly if it is deep inside the body, such as the hip.

Babies may be irritable, feed less or cry when a limb is moved. A young child may stop walking, limp or refuse to use an arm or leg. Older children may describe pain in the joint or nearby area.

Symptoms around an artificial joint can sometimes develop more gradually. These may include increasing pain, stiffness, swelling, wound drainage or loosening of the implant.

Several other conditions can cause similar symptoms, including gout, injury and inflammatory arthritis. Symptoms alone cannot reliably show whether a joint is infected.

- Severe pain in one joint
- Swelling, warmth or redness around the joint
- Difficulty moving or putting weight on the joint
- Fever, chills or feeling generally unwell

Causes and risk factors

Septic arthritis usually happens when bacteria travel through the bloodstream from another part of the body. The original infection may be in the skin, urinary tract, lungs or elsewhere. Sometimes no starting point is found.

Bacteria can also enter a joint directly through an injury, bite, operation, injection or other procedure. Infection may occasionally spread from nearby skin, soft tissue or bone.

Staphylococcus aureus is a common cause. Other bacteria may be involved depending on your age, health, recent medical care and how the infection entered the joint. Gonorrhoea, a sexually transmitted infection, can sometimes cause septic arthritis. Fungal infections are possible but much less common.

Factors that increase the chance of septic arthritis include:

Having a risk factor does not mean you will develop septic arthritis. It can also occur in

someone without a known risk factor.

- An artificial joint or recent joint operation
- Rheumatoid arthritis or another long-term joint condition
- Diabetes or a weakened immune system
- A recent joint injection or injury that broke the skin
- Skin ulcers, wounds or skin infections
- Injecting non-prescribed drugs
- Being very young or an older adult

Diagnosis

Diagnosis usually takes place in hospital. The healthcare team will examine the painful joint and ask how quickly the symptoms began. They may also check for wounds, skin infections, recent procedures or infection elsewhere in the body.

The most important test is usually joint aspiration. A clinician inserts a sterile needle into the joint and removes some fluid. Ultrasound or another imaging method may help guide the needle, especially for deep joints.

The fluid is examined for white blood cells, bacteria and crystals. A laboratory culture attempts to grow and identify the germ. This helps confirm the infection and shows which antibiotics like amoxicillin or doxycycline are likely to work.

Finding crystals may support a diagnosis such as gout, but it does not completely exclude an infection. Occasionally, both conditions occur at the same time.

Blood tests can look for inflammation and other signs of infection. Blood cultures may detect bacteria circulating in the bloodstream. An X-ray provides a record of the joint and may identify another cause of pain. Ultrasound or MRI may be used to find fluid, assess deeper joints or look for infection in nearby bone and tissue.

When possible, fluid and blood samples are collected before antibiotics begin. Treatment should not be delayed for testing if someone is seriously unwell or showing signs of sepsis.

Treatment and management

Septic arthritis is treated in hospital. The main parts of treatment are antibiotics and drainage of the infected joint.

Antibiotics are usually started promptly. Early treatment may be given into a vein. The choice can be adjusted when test results identify the germ. Some people later change to antibiotic tablets. The total treatment period is based on the organism, affected joint, drainage results and response to treatment.

Infected fluid must usually be removed. This lowers pressure in the joint and helps control the infection. Drainage may involve:

More than one drainage procedure may be needed if infected fluid builds up again or the infection does not improve. Deep joints, delayed infections and artificial joints are more likely to require surgery.

An infected artificial joint needs specialist orthopaedic care. Treatment may involve cleaning the joint while keeping the implant, or removing and replacing part or all of it. The approach is influenced by how long the infection has been present, the organism and whether the implant remains secure.

Pain relief and fluids may be provided. The joint may be rested briefly while pain is severe. Once the infection is controlled, guided movement and physiotherapy can help limit stiffness and rebuild strength. The timing must be matched to the affected joint and any operation.

Follow-up may include repeat examinations and blood tests. Ongoing fever, pain, swelling or poor movement can mean that further drainage, imaging or a change in antibiotics is needed.

- Repeated aspiration with a needle
- Keyhole surgery to wash out the joint
- Open surgery in selected cases

Complications

Septic arthritis can damage cartilage and the ends of the bones within a joint. Lasting effects can include pain, stiffness, reduced movement and osteoarthritis.

Other possible complications include:

Children may rarely develop damage near a bone's growth area, especially when the hip is involved. This can affect how the bone or joint develops.

The risk of complications is greater when treatment is delayed, drainage is difficult or the infection involves a joint that was already damaged. Serious complications can still occur despite appropriate care, but prompt treatment reduces the risk.

- Infection spreading into nearby bone

- A collection of pus in surrounding tissue
- Infection of an artificial joint
- Infection returning after treatment
- Sepsis, a dangerous whole-body response to infection

Prevention

Septic arthritis cannot always be prevented. Bacteria can sometimes enter the bloodstream without an obvious source, and some risk factors cannot be changed.

You can reduce some risks by cleaning and covering broken skin and seeking care for infected wounds. Do not inject non-prescribed substances into a vein or joint. If you inject drugs, local harm-reduction services can provide sterile equipment and confidential support.

Follow wound-care instructions after joint surgery or injections. Report increasing pain, redness, swelling, drainage or fever rather than waiting for a routine appointment.

Safer sex and testing for sexually transmitted infections can reduce the risk of gonorrhoea and its complications. Treating bacterial infections as advised may also help prevent spread through the bloodstream.

Routine preventive antibiotics are not appropriate for everyone with an artificial joint. Decisions about antibiotics before procedures should be based on individual medical and dental advice.

Living with it and what to expect

Many people recover after the infection is drained and treated with antibiotics. Improvement in fever and general illness may begin before joint pain and movement return to normal.

Recovery can take weeks or months. A joint may remain swollen, weak or stiff after the infection has cleared. Physiotherapy and gradually increasing activity can help restore movement and muscle strength. Recovery may take longer after surgery or when the hip, spine or an artificial joint is involved.

Some people have lasting discomfort or limited movement because the infection damaged cartilage. This does not necessarily mean that infection is still present. Follow-up can help distinguish healing, permanent joint changes and signs of ongoing infection.

Complete the antibiotic course as directed, even if the joint feels better. Contact the treating

team promptly if pain, swelling, wound drainage or fever returns during or after treatment.

An artificial-joint infection may need prolonged treatment and more than one operation. Recovery is often measured over months. The specialist team can explain what the treatment means for mobility, work and future procedures.

When to get medical help

Seek urgent, same-day medical assessment for a suddenly painful, swollen or hot joint, especially if movement or weight-bearing is difficult. Do this even without a fever.

A child who has a fever and refuses to walk or use a limb also needs urgent assessment. Contact the hospital team promptly for new or worsening joint symptoms after joint surgery, an injection or artificial-joint replacement.

Do not wait for a routine appointment if septic arthritis is possible. Do not try to drain the joint yourself or use leftover antibiotics.

Call emergency services if joint symptoms occur with signs of severe infection, such as:

These can be signs of sepsis and require emergency care.

Routine follow-up is used to monitor healing, antibiotic treatment and joint movement. Mild stiffness that is steadily improving can usually be discussed at a planned review. New fever, increasing pain or renewed swelling should be reported sooner.

- New confusion, unusual drowsiness or difficulty waking
- Severe breathing difficulty
- Blue, grey, very pale or blotchy skin
- Collapse, fainting or inability to stay awake

Common questions

Can septic arthritis go away on its own?

It is not safe to wait for it to clear without treatment. Bacteria can continue damaging the joint and may spread into the blood. Suspected septic arthritis needs urgent assessment, antibiotics and usually drainage.

Is septic arthritis contagious?

Septic arthritis itself is not usually passed directly from one person to another. However, an infection that caused it may be transmissible. Gonorrhoea is one example. The healthcare

team may recommend testing or treatment for sexual partners when relevant.

How quickly can septic arthritis damage a joint?

Damage can develop quickly, but the exact timing cannot be predicted. The type of bacteria, affected joint and speed of treatment all matter. This is why a hot, swollen and very painful joint is assessed urgently.

Is draining the joint painful?

Local anaesthetic is commonly used to numb the area before aspiration. You may still feel pressure or brief discomfort. Deeper joints may need imaging guidance, sedation or drainage during an operation.

How can I tell septic arthritis from gout?

Both can cause sudden, severe pain, warmth and swelling. Fever may occur with either, and their appearance can overlap. Testing joint fluid is often needed. Finding gout crystals does not completely rule out infection.

Can septic arthritis come back?

It can return if infection remains in the joint, bacteria spread there again or an artificial joint stays infected. Recurrent pain, swelling, fever or wound drainage needs prompt reassessment.

Sources

- NHS: Septic arthritis - symptoms, urgent assessment and hospital treatment.
- European Bone and Joint Infection Society: Guideline for management of septic arthritis in native joints - Journal of Bone and Joint Infection , 2023.
- American Academy of Family Physicians: Septic Arthritis-Diagnosis and Treatment - American Family Physician , 2021.
- Pediatric Infectious Diseases Society and Infectious Diseases Society of America: Acute Bacterial Arthritis in Pediatrics - clinical practice guideline, 2023.
- Versus Arthritis: Septic arthritis - patient information on causes, diagnosis, treatment and recovery.