CONDITION

Middle ear infection

A middle ear infection is inflammation behind the eardrum, usually caused by a virus or bacteria.

WHAT IT IS
Infection and inflammation behind the eardrum

BODY SYSTEM
Ears and hearing

MAIN SYMPTOMS
Ear pain, fever, reduced hearing, irritability

WHAT CAUSES IT
Viral or bacterial infection

HOW IT IS DIAGNOSED
Symptoms and examination of the eardrum

MAIN TREATMENT
Pain relief, observation, sometimes antibiotics

CAN IT BE CURED?
Yes, most infections clear completely

IS IT AN EMERGENCY?
Sometimes, with swelling behind the ear

LONG-TERM OUTLOOK
Usually full recovery without lasting hearing problems

Overview

A middle ear infection is an infection in the air-filled space behind the eardrum. The medical name is acute otitis media . It is especially common in babies and young children, but older children and adults can also develop it.

The middle ear connects to the back of the nose through a narrow passage called the Eustachian tube . This tube helps drain fluid and balance air pressure. A cold or another respiratory infection can make the tube swollen or blocked. Fluid then collects behind the eardrum, where viruses or bacteria may grow.

Middle ear infections can cause significant pain, fever and temporary difficulty hearing. Most improve within several days and do not cause lasting harm. Some people need antibiotics like amoxicillin or doxycycline , while others recover with pain relief and observation.

A middle ear infection is different from swimmer's ear , which affects the outer ear canal. It is also different from otitis media with effusion , sometimes called glue ear. Glue ear means fluid remains behind the eardrum without signs of a new, active infection.

Symptoms

Ear pain is the most common symptom. It may begin quickly and can be worse when lying down. Older children and adults may describe pressure, fullness or throbbing in the ear.

Babies and young children cannot always explain where they hurt. They may become unusually irritable, cry more than usual or have difficulty sleeping. Pulling or rubbing an ear can occur, but this behaviour alone does not confirm an infection.

Other possible symptoms include:

Discharge may mean that pressure has made a small hole in the eardrum. This is called a perforated eardrum . The pain may ease after the fluid drains, but the ear still needs medical assessment.

Symptoms often appear during or shortly after a cold. Vomiting or diarrhoea can occur in young children, although these symptoms may have another cause.

- Fever
- Reduced or muffled hearing
- Poor feeding or loss of appetite
- Headache
- Problems with balance
- Fluid, pus or blood-stained discharge from the ear

Causes and risk factors

Middle ear infections are usually linked to viruses or bacteria that also cause nose and throat infections. A viral cold may start the swelling, followed by a bacterial infection in the trapped middle ear fluid. It is not always possible to tell which type of germ is responsible from symptoms alone.

Young children are affected more often because their Eustachian tubes are shorter, narrower and more level than those of adults. Their immune systems are also still developing. As the head grows, the tubes usually drain more effectively.

Factors associated with a greater chance of middle ear infection include:

Some children develop infections despite having none of these risk factors. Middle ear infections themselves are not directly passed from person to person, although the viruses that often lead to them can spread.

- Recent colds or other respiratory infections
- Regular close contact with other children
- Exposure to tobacco smoke
- Using a bottle while lying flat
- A cleft palate or another difference affecting facial structure
- Conditions or treatments that weaken the immune system
- A history of repeated middle ear infections

Diagnosis

A clinician will ask about the symptoms, when they began and whether there has been fever, ear discharge or a recent cold. They will examine the ear using an otoscope , a small lighted instrument that allows them to see the eardrum.

An infected middle ear may make the eardrum look red, cloudy or bulging. A bulging eardrum and fluid behind it are stronger evidence of acute infection than redness alone. Crying, fever and irritation of the ear canal can also make an eardrum look red.

The clinician may use a gentle puff of air or another device to check how well the eardrum moves. Limited movement can suggest fluid behind it. A hearing test is not usually needed for a single short infection, but it may be arranged if fluid or hearing problems continue.

Scans and blood tests are not normally required. They may be considered if symptoms suggest that infection has spread beyond the middle ear.

Treatment and management

Treatment focuses first on relieving pain. Appropriate pain-relieving medicines can reduce discomfort and fever. A pharmacist or clinician can help you choose a suitable product, particularly for a baby, during pregnancy or when other health conditions are present. Aspirin should not be given to children or teenagers because of the risk of a rare but serious illness called Reye syndrome.

A warm cloth held against the outside of the ear may feel soothing. Encourage fluids and allow time for rest. Keep water, cotton buds and other objects out of an ear that is draining.

Many uncomplicated middle ear infections improve without antibiotics. A clinician may recommend watching symptoms closely for a short period, particularly when symptoms are mild and reliable follow-up is possible.

Antibiotics may be recommended when the chance of a bacterial infection or complication is higher. The decision takes account of age, symptom severity, discharge from the ear, whether one or both ears are affected, other medical conditions and whether symptoms are improving. If antibiotics are prescribed, take them exactly as directed and complete the advised course unless a healthcare professional tells you otherwise.

Antibiotics do not treat viruses. They can also cause side effects such as diarrhoea, nausea, rash or allergic reactions. Using them only when they are likely to help reduces unnecessary side effects and slows antibiotic resistance.

Decongestants and antihistamines like cetirizine or loratadine do not usually help an acute middle ear infection. Some ear drops are unsafe when the eardrum has a hole or when ear tubes are present, so check before using them.

People with repeated infections may be referred to an ear, nose and throat specialist. In selected children, small ventilation tubes called grommets may be considered, especially when persistent fluid affects hearing. They are not routinely needed after one infection.

Complications

Complications are uncommon, but they can occur.

Fluid may remain behind the eardrum after the infection has cleared. This can cause temporary reduced hearing for several weeks. Persistent fluid in both ears may affect speech, language or classroom listening in some children and should be followed up.

Pressure can cause the eardrum to perforate. Most small infection-related holes heal on their own, but ongoing discharge or hearing loss needs reassessment.

Repeated infections can disrupt sleep, childcare, school and work. They may also lead to repeated courses of treatment or specialist review.

A rare complication is mastoiditis , an infection of the bone behind the ear. It may cause increasing pain, redness or swelling behind the ear, sometimes making the ear stick out. Infection can very rarely spread deeper into the skull or affect the nerves controlling the face.

Prevention

Middle ear infections cannot always be prevented. Young children may develop them as their immune systems and Eustachian tubes mature.

You may be able to lower the chance of some infections by:

These measures reduce risk but do not guarantee prevention. A middle ear infection is not evidence of poor hygiene or parenting.

- Keeping children away from tobacco smoke and vaping aerosols
- Following recommended childhood vaccination schedules
- Getting recommended seasonal influenza vaccination
- Washing hands and reducing contact with respiratory infections where practical
- Feeding babies in a supported, more upright position rather than flat
- Breastfeeding, when possible and chosen, because it is linked with fewer early infections

Living with it and what to expect

Pain and fever often begin improving within a few days, although symptoms can last about a week. Seek review if they are worsening or not starting to improve within the timeframe given by the clinician.

Hearing may remain muffled after the pain settles because fluid takes longer to drain. This does not necessarily mean that infection is still present or that another antibiotic is needed. Most retained fluid clears over the following weeks, but some lasts longer.

During temporary hearing difficulty, it may help to reduce background noise, face the child when speaking and tell teachers or caregivers what is happening. Watch for changes such as unclear speech, difficulty following instructions or turning up the volume unusually high.

Most people recover fully without long-term hearing loss. Repeated infections often become less frequent as a child grows and the Eustachian tubes mature. However, a child with frequent infections, persistent fluid or concerns about speech and hearing may need ongoing hearing checks or specialist care.

Repeated middle ear infections are less common in adults. An adult with persistent symptoms, recurrent discharge or repeated infections may need further examination to look for an underlying blockage or another ear condition.

When to get medical help

Arrange routine medical advice if ear pain is not beginning to improve after several days, keeps returning or is accompanied by ongoing reduced hearing. Follow-up is also appropriate if ear discharge continues, symptoms return soon after treatment, or you are concerned about a child's speech, language or responses to sound.

Seek same-day urgent medical care for:

Call emergency services for a seizure, severe confusion, a stiff neck with significant illness, breathing difficulty or loss of consciousness. These symptoms are not typical of an uncomplicated middle ear infection and need immediate assessment.

- Redness, tenderness or swelling behind the ear
- An ear that begins to stick out because of swelling
- New weakness or drooping on one side of the face
- Severe or rapidly worsening pain
- Persistent vomiting, marked dizziness or difficulty walking
- A baby younger than 3 months with a temperature of 38°C or higher
- Symptoms in someone with a significantly weakened immune system
- A person who appears very unwell or is difficult to rouse

Common questions

Is a middle ear infection contagious?

The infection behind the eardrum is not usually passed directly to someone else. However, the cold or respiratory virus that triggered it may be contagious. Handwashing and avoiding shared cups can reduce spread.

Can a middle ear infection clear without antibiotics?

Yes. Many mild infections improve as the immune system clears them. Antibiotics are more likely to be considered when symptoms are severe, complications are suspected, or age and medical history increase the risk of problems.

Why does hearing stay muffled after the pain is gone?

Fluid can remain behind the eardrum after the active infection settles. This prevents the eardrum from moving normally and can make sounds seem quiet or blocked. Hearing usually

returns as the fluid drains.

Can flying make a middle ear infection worse?

Changes in cabin pressure may increase pain when the Eustachian tube is blocked. If travel cannot be delayed, ask a clinician or pharmacist about suitable pain relief. Severe symptoms, a recent procedure or complications may require individual advice before flying.

Does ear pulling mean my baby has an infection?

Not always. Babies may pull their ears when tired, teething or exploring their bodies. An infection is more likely when ear pulling occurs with pain, fever, poor feeding, sleep disturbance or cold symptoms. An ear examination is needed to confirm the cause.

Why does my child keep getting middle ear infections?

Young children's Eustachian tubes block easily, and frequent respiratory infections increase the chance of trapped fluid. Infections often become less common with age. Frequent episodes, persistent hearing problems or ongoing fluid may lead to hearing tests or specialist assessment.

Sources

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