CONDITION

Congenital toxoplasmosis

Congenital toxoplasmosis is a parasitic infection passed to a developing baby during pregnancy.

WHAT IT IS
Toxoplasma infection acquired before birth

BODY SYSTEM
Eyes, brain, nervous system, hearing, and liver

MAIN SYMPTOMS
Eye inflammation, seizures, jaundice, developmental difficulties

WHAT CAUSES IT
Parasitic infection during pregnancy

HOW IT IS DIAGNOSED
Parasite PCR and infant antibody testing

MAIN TREATMENT
Specialist-led antiparasitic medicines

CAN IT BE CURED?
No - treatment controls active infection

IS IT AN EMERGENCY?
Sometimes - with seizures or sudden vision loss

LONG-TERM OUTLOOK
Often good, but eye or brain problems may emerge

Overview

Congenital toxoplasmosis is an infection caused by the parasite Toxoplasma gondii . "Congenital" means that the infection was acquired before birth.

The infection can pass through the placenta when a pregnant person becomes infected. Many pregnant people have no symptoms or only a mild, flu-like illness, so they may not know they have toxoplasmosis.

A baby with congenital toxoplasmosis may appear healthy at birth. Others have problems involving the eyes, brain, liver, blood, or other organs. Eye disease, hearing problems, or learning and developmental difficulties can also appear months or years later.

The chance that the parasite will pass to the baby generally rises as pregnancy progresses.

However, infection acquired earlier in pregnancy is more likely to cause serious harm if transmission occurs. This pattern does not predict what will happen to an individual baby.

Early diagnosis matters because antiparasitic treatment may reduce active infection and the risk or severity of some complications. Children also need follow-up because new eye or developmental problems can emerge after infancy.

Symptoms

Most newborns with congenital toxoplasmosis do not have obvious symptoms at birth. An infant who looks well can still have infection and may need treatment and monitoring.

Possible signs in a newborn include:

Congenital toxoplasmosis can cause chorioretinitis. This is inflammation at the back of the eye involving the retina, the light-sensing layer, and the tissue beneath it. It may cause blurred vision, eye pain, sensitivity to light, floating spots, or loss of vision. A young child may not be able to describe these changes.

Brain infection can lead to hydrocephalus, a build-up of fluid in spaces within the brain. Calcium deposits may also develop in brain tissue. These findings are detected with imaging rather than by appearance alone.

Problems that may become noticeable later include reduced vision, crossed eyes, hearing loss, delayed speech or movement, learning difficulties, and seizures. Some children never develop these problems.

- Poor feeding, low birth weight, or slow growth
- Jaundice, which causes yellow skin or eyes
- An enlarged liver or spleen
- A widespread rash or small red-purple spots caused by bleeding under the skin
- An unusually small or large head
- Seizures or unusual sleepiness
- Swollen lymph nodes
- Eye inflammation or abnormal eye movements
- Reduced muscle tone or difficulty controlling movement

Causes and risk factors

Toxoplasma gondii is a microscopic parasite. People can become infected by eating undercooked contaminated meat, handling contaminated soil or cat litter, eating unwashed produce, or consuming contaminated food or water.

Cats can shed the parasite in their stool after becoming infected. Direct contact with a cat is not usually the source of infection, and having a cat does not mean that a pregnancy is at risk. The concern is contact with contaminated stool, soil, food, or surfaces.

Congenital toxoplasmosis most often occurs when a person has their first Toxoplasma infection during pregnancy or shortly before conception. The parasite can then cross the placenta.

Transmission from an infection acquired well before pregnancy is uncommon because the immune system usually keeps the parasite inactive. Rarely, an old infection can reactivate during pregnancy if the pregnant person has a severely weakened immune system.

The condition is not inherited through genes. A child with congenital toxoplasmosis cannot spread it to other people through ordinary contact.

Diagnosis

Testing during pregnancy may begin with blood tests for antibodies to Toxoplasma . Antibodies are proteins made by the immune system. Different antibody patterns can suggest an older infection, a recent infection, or a result that needs confirmation.

A positive IgM antibody result does not prove that infection happened during pregnancy. IgM can remain detectable for a long time or produce a false-positive result. Repeat testing, IgG avidity testing, and assessment by an experienced laboratory may help estimate when infection occurred. Avidity testing measures how strongly IgG antibodies attach to the parasite.

If fetal infection is suspected, polymerase chain reaction testing, known as PCR, may be performed on amniotic fluid. PCR looks for the parasite's genetic material. Ultrasound may identify findings such as fluid around the brain or changes in growth, but a normal ultrasound cannot rule out infection.

After birth, diagnosis may involve:

No single test is perfect in every situation. Results are interpreted together with the timing of maternal infection, examination findings, imaging, and follow-up blood tests.

A baby with confirmed or suspected infection usually has a detailed eye examination, hearing

assessment, neurological examination, and brain imaging. Blood tests may assess the liver, blood cells, and other organs. A lumbar puncture may be used to examine the fluid around the brain and spinal cord.

- Infant IgM and IgA antibody tests
- Comparison of infant and maternal antibody patterns
- Monitoring whether IgG antibodies remain beyond the expected period for transferred maternal antibodies
- PCR testing of blood, cerebrospinal fluid, placenta, or other samples

Treatment and management

Treatment is planned by specialists in paediatric infectious diseases, pregnancy care, and sometimes eye or neurological care.

Babies with confirmed congenital toxoplasmosis are generally treated with a combination of antiparasitic medicines. Commonly used medicines include pyrimethamine and sulfadiazine, together with folinic acid. Folinic acid helps protect healthy blood cells from the effects of pyrimethamine.

Treatment usually continues for many months and may extend through the first year of life under specialist protocols. The exact plan is based on test results, symptoms, age, and local guidance. Do not change or stop these medicines without advice from the specialist team.

Regular blood tests are needed because treatment can affect blood cell production. The care team also monitors for rashes, digestive problems, liver effects, and other medicine-related concerns.

Corticosteroids like prednisone or hydrocortisone may be considered in selected cases with serious eye inflammation or marked inflammation involving the brain and spinal fluid. They are not routine treatment for every child.

If infection is identified during pregnancy, treatment may be offered to reduce the chance of transmission or to treat suspected fetal infection. The medicine chosen is influenced by the stage of pregnancy and whether testing suggests that the fetus is infected. This requires specialist assessment because treatment options and safety considerations change during pregnancy.

Other support is matched to the child's needs. It may include glasses, low-vision support, hearing devices, seizure treatment, physiotherapy, occupational therapy, or help with communication and learning.

Complications

Congenital toxoplasmosis can affect children differently. Some have no lasting impairment, while others have complications from birth or develop them later.

Possible complications include:

Eye inflammation can return after a long quiet period, including during adolescence or adulthood. The effect on vision depends partly on where scarring occurs. A small scar away from the centre of vision may cause few symptoms, while inflammation near the central retina can have a greater effect.

Brain injury that occurred before birth may not be reversible. Treatment aims to control active infection and reduce further harm; it cannot always repair established damage.

- Recurrent inflammation and scarring at the back of the eye
- Reduced vision, blind spots, or blindness
- Hearing loss
- Seizures
- Hydrocephalus
- Difficulties with movement, balance, speech, or coordination
- Learning or developmental difficulties
- Problems with growth
- Liver, blood, or lung problems during severe newborn infection

Prevention

Congenital toxoplasmosis cannot always be prevented. However, reducing exposure to Toxoplasma during pregnancy can lower the chance of a new infection.

Food and hygiene measures include:

If possible, someone else should clean a cat's litter tray during pregnancy. If that is not possible, wear disposable gloves, clean the tray daily, and wash your hands afterwards. Keeping cats indoors and not feeding them raw or undercooked meat reduces their chance of becoming infected.

There is generally no need to give up a pet cat. Stroking a cat is not a usual route of transmission.

Routine toxoplasmosis screening during pregnancy differs between countries and health systems. If you are pregnant and think you may have been exposed, contact your pregnancy care team rather than relying on symptoms.

- Cook meat thoroughly and avoid tasting it before it is fully cooked
- Wash fruit and vegetables before eating them
- Wash hands after handling raw meat, soil, or unwashed produce
- Clean knives, boards, and work surfaces after preparing raw meat
- Wear gloves while gardening or handling soil
- Avoid untreated water where contamination may be possible
- Avoid unpasteurised goat's milk and products made from it

Living with it and what to expect

The first year may involve prolonged medication, regular blood tests, and appointments with several specialists. Even when a baby has no visible symptoms, these visits help detect changes early.

Eye examinations are especially important because retinal inflammation can appear or return later. Hearing, growth, movement, language, learning, and seizure risk may also be monitored through childhood. The frequency of follow-up is based on the child's infection history and findings.

Many children with no symptoms at birth grow and take part in everyday school, family, and social activities. Some need glasses or extra developmental support. Children with significant eye or brain involvement may need long-term help with vision, movement, communication, learning, or independent living.

Some effects, such as existing brain or retinal scars, do not disappear after the infection is controlled. Other needs can change as a child grows and school tasks become more complex. Support may therefore be adjusted over time.

Adolescents and adults born with congenital toxoplasmosis should know about the possibility of recurrent eye inflammation. New floaters, blurred vision, eye pain, or light sensitivity should not be ignored, even if the infection has been quiet for years.

Keeping a clear record of test results, treatment, eye findings, and previous imaging can help when care moves between paediatric and adult services.

When to get medical help

Call emergency services if a baby or child has:

Seek urgent medical assessment for a fever in a baby younger than 3 months, poor feeding with fewer wet nappies, repeated vomiting, worsening jaundice, a bulging soft spot, or new unusual movements. These symptoms have many possible causes and do not prove toxoplasmosis, but young babies need prompt assessment.

New blurred vision, floaters, eye pain, redness, or sensitivity to light needs prompt eye assessment because it may indicate active retinal inflammation.

Contact the specialist team promptly if a child taking treatment develops a widespread rash, mouth sores, unusual bruising, marked paleness, persistent fever, or severe vomiting.

Routine follow-up remains important when a child appears well. Attend planned blood tests, eye examinations, hearing checks, and developmental reviews. Between visits, mention changes in vision, hearing, school progress, movement, or behaviour.

- A seizure lasting several minutes, repeated seizures, or a first seizure
- Severe difficulty breathing, blue or grey skin, or unresponsiveness
- Sudden major loss of vision
- Extreme difficulty waking or a sudden severe change in awareness

Common questions

Can a baby have congenital toxoplasmosis and look healthy?

Yes. Most infected newborns have no obvious symptoms at birth. Eye, hearing, developmental, or neurological problems may appear later, which is why testing and long-term follow-up matter.

Did my cat cause congenital toxoplasmosis?

Not necessarily. Infection is more often linked to contaminated food, soil, water, or surfaces than to touching a cat. Cats shed the parasite only under certain circumstances. There is usually no reason to remove a healthy pet from the home.

Can congenital toxoplasmosis be cured completely?

Treatment can control active infection and reduce complications, but it does not reliably remove every inactive parasite from the body. Eye inflammation can therefore return later. This does not mean that every child will have a recurrence.

Can congenital toxoplasmosis spread between children?

No. It does not spread through hugging, sharing toys, coughing, or ordinary household contact. The congenital infection was acquired through the placenta before birth.

Will my child be able to see normally?

Many children retain useful or normal vision, especially if there is no central retinal damage. Others have reduced vision from inflammation or scarring. Eye examinations give more specific information, but future inflammation cannot always be predicted.

Can it affect a future pregnancy?

A past infection usually provides immunity, making transmission in a later pregnancy uncommon. Different considerations apply if the immune system is severely weakened or if there is uncertainty about when infection occurred. Pregnancy-specific advice should come from an obstetric or infectious-diseases specialist.

Sources

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