

# Congenital toxoplasmosis

**Author: Dr Elisabeth Robert-Gnansia<sup>1,2</sup>**

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<sup>1</sup>member of Editorial Committee of Orphanet Encyclopedia

<sup>2</sup> Institut Européen des Génomutations, 86 Rue du docteur Edmond Locard, 69005 Lyon, France.  
[elisabeth.robert@ieg.asso.fr](mailto:elisabeth.robert@ieg.asso.fr)

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## Abstract

*Toxoplasmosis is caused by infection with the protozoan parasite Toxoplasma gondii. Congenital toxoplasmosis is an infection resulting from the transplacental passage of the parasites from an infected mother to the foetus. An acute infection in pregnant women is associated with a range of outcomes from subclinical infection to intrauterine death. Damage to the central nervous system (cerebral calcification, hydrocephalus,, microcephaly) and choroidoretinitis accounts for most of the nonfatal morbidity. The newborn often has a low birth weight, enlarged liver and spleen, jaundice, anemia, petechiae, and eye damage evidenced by inflammation of the retina. Children who are apparently normal at birth may subsequently develop toxoplasmosis-associated injuries. The diagnosis of congenital toxoplasmosis frequently relies on PCR tests of amniotic fluid. In case of seroconversion during pregnancy (between 5.000 et 10.000 cases per year in France), the rate of transplacental transmission of the toxoplasma varies from 6% at 13 weeks gestation to 72% at 36 weeks. Although the efficacy of therapy is debated, early treatment may prevent the further progress of the infectious process and the development of handicaps in children.*

## Key words

Fetal infection with toxoplasmosis, transplacental passage, calcification, hydrocephalus,, microcephaly, seizures, chorioretinitis

## Disease name

Congenital toxoplasmosis

Fetal infection with toxoplasmosis

toxoplasmosis-associated injuries, including deafness, microcephaly, and low IQ.

## Diagnostic criteria / definition

Human toxoplasmosis is usually asymptomatic in adults. However, infection of pregnant women may result in congenital toxoplasmosis, which manifests in affected newborn as the variable association of encephalitis and/or hydrocephalus with intracranial calcification, chorioretinitis with scarring and loss of vision, hepatitis, and lymphadenopathy. Children who are apparently normal at birth may subsequently develop

## Incidence

In case of seroconversion during pregnancy (between 5.000 et 10.000 cases per year in France), the rate of transplacental transmission of the toxoplasma varies from 6% at 13 weeks gestation to 72% at 36 weeks. The highest risk (10%) of having a congenitally infected child was found in women who seroconverted at 24 to 30 weeks of gestation.

### Prenatal diagnosis

Prenatal evaluation of transplacental transmission of the toxoplasma is based on amniotic fluid PCR analysis, and possibly on mouse inoculation with amniotic fluid (4). The presence of IgM does not necessarily reveal a very recent infection, as it may persist more than one year. In case of positive IgM, the diagnosis of recent infection is based on IgG avidity. In case of an ancient infection, urea cannot disrupt the antigen/antibody complex.

### Treatment

Women believed to have acquired toxoplasmosis during pregnancy are routinely treated. Although the efficacy of this is debated, early treatment may prevent the further progress of the infectious process and the development of handicaps in children. The treatment is as follows.

#### Before 30 weeks

- If the toxoplasma is not detected in the amniotic fluid and if ultrasound examination is normal: prescription of 9 million UI of spiramycin per day until parturition.
- If the toxoplasma is detected in the amniotic fluid and if ultrasound examination is normal : prescription of pyrimethamine and sulfonamides, together with folic acid.
- In case of cerebral microcalcifications or hydrocephaly diagnosed by ultrasound, a termination of pregnancy may be proposed to the parents.

#### After 30 weeks

The risk of transplacental transmission is high, and pyrimethamine and sulfonamides are systematically prescribed.

In any case preconceptional serology should be preferably available, and there should be at least a 4 week delay between maternal infection and prenatal diagnosis in order to avoid false negative results.

#### At birth

Even if there is no evidence for transmission of the toxoplasma through the placenta, congenital infection cannot be excluded. It is then necessary to examine the newborn with a transfontanelar ultrasonography and ophthalmologic surveillance. If the clinical examination and the serology are negative, no treatment is necessary. If the serology is positive, parents can be only reassured when serology has become negative. The infected child must be treated with pyrimethamine and sulfonamides for twelve months.

### Recommendations for prevention

In France prevention of congenital toxoplasmosis is routinely applied: all pregnant women are tested in the first trimester, and seronegative patients then have a monthly test until parturition (birth).

*Toxoplasma* infection in women at risk can be prevented in large part by:

- cooking meat to a safe temperature
- peeling or thoroughly washing fruits and vegetables before eating;
- cleaning cooking surfaces and utensils after they have contacted raw meat, poultry, seafood, or unwashed fruits or vegetables;
- avoiding changing cat litter or, if no one else is available to change the cat litter, using gloves, then washing hands thoroughly;
- not feeding raw or undercooked meat to cats and keeping cats inside to prevent acquisition of *Toxoplasma* by eating infected prey.

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