

# Managing a Case of Toxoplasmosis during Pregnancy in Iran

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## ABSTRACT

**Background & Objective:** The history of infection is confirmed by serological tests and the incidence and severity of congenital Toxoplasma infection depend on the gestational age at the time of maternal infection. A precise serological diagnosis is important in the management of toxoplasmosis, and timely treatment prevents the complications of the infection. This study aimed to manage a case of acute toxoplasmosis during pregnancy and its results.

**Case Report:** In the present study, a pregnant woman was diagnosed with acute toxoplasmosis by considering the positive result of antibodies specific to *Toxoplasma gondii* and was treated based on the principal treatment that prevented congenital toxoplasmosis in her fetus.

**Conclusion:** Preventing acute Toxoplasma infection is very effective during pregnancy. Timely treatment can prevent the fetal and neonatal complications of toxoplasmosis.

**Keywords:** Management, Pregnancy, Toxoplasmosis

## Introduction

*Toxoplasma gondii* is the causative agent of toxoplasmosis and is a parasitic protozoan that infects a wide range of humans and animals. Toxoplasmosis is considered as a disease common to humans and animals. On average, 30-60% of people are infected in various countries around the world and it is estimated that at most 5 cases out of every 1,000 pregnancies are infected with acute toxoplasmosis (1). Studies carried out in Iran have shown the prevalence of this infection in many parts of the country (2-5). The overall prevalence of anti-Toxoplasma antibody in Iranian pregnant women was 2.34% (5-7). It has also been reported that the incidence of congenital toxoplasmosis ranged from 0.8 per 1,000 to 3.5 per 1,000 births (8-11).

During pregnancy, human infections are mainly transmitted through the placenta from a mother to her fetus. Congenital toxoplasmosis, if occurs in the first trimester of pregnancy, leads to miscarriage and central and optic nervous system disorders. Therefore, applying accurate diagnostic methods is important in examining women with toxoplasmosis (6). The infection transmission rate from a mother to her fetus

in the first, second, and third trimesters of pregnancy is 10 to 25%, 30 to 45%, and 60 to 65%, respectively (12). The clinical manifestations of toxoplasmosis are widespread and include fever, hydrocephalus, microcephaly, hepatosplenomegaly, jaundice, seizure, chorioretinitis (usually bilateral), intracerebral calcification, and mental retardation in the first half of pregnancy. Among the most prevalent cases, chorioretinitis and central nervous system lesions can be mentioned. These two may lead to debilitating symptoms at birth or later in life if left untreated. The incidence of this infection in the second half of pregnancy may be asymptomatic. As the fetus grows, while the likelihood of congenital transmission increases, the severity of the disease decreases (6-7). Maternal infection increases the rate of preterm delivery before 37 weeks of gestation by four times. The important point is that most infected fetuses are born when they indicate no obvious symptoms of toxoplasmosis on routine examinations (7-8).

The main diagnostic method is the use of serological tests, which are applied to detect different classes of

specific *Toxoplasma gondii* antibodies, especially IgG-ELISA and IgM-ELISA (9).

Spiramycin is commonly prescribed to treat women with acute infection in early pregnancy. Pyrimethamine, sulfadiazine, and folic acid are also prescribed in cases of maternal infection after 18 weeks of gestation or when there is a possibility of fetal infection (13-14). Congenital infection should be prevented by decreasing the chance of exposure to the infection during pregnancy. Taking measures, such as cleaning kitchen surfaces or appliances that are in contact with raw meat, poultry, seafood, or dirty vegetables and fruits, cooking meat at a safe temperature, washing and peeling the fruits carefully, wearing gloves, and not having a cat, is helpful during pregnancy (13).

Due to the complications of congenital toxoplasmosis, accurate diagnosis and treatment of women with toxoplasmosis are of great significance. The present study aimed to report a pregnant case with acute toxoplasmosis which, with timely diagnosis, treatment, and follow-up, did not lead to congenital toxoplasmosis.

## Case Report

A 32-year-old G<sub>4</sub>P<sub>2</sub>CS<sub>1</sub> pregnant woman with 2 previous cesarean sections who was under prenatal care was found positive for antibodies specific to toxoplasmosis (IgG and IgM) during routine pregnancy tests at 16 weeks of gestation. The patient underwent amniocentesis to examine the fetal infection, and positive toxoplasmosis was reported. After gynecological counseling at approximately 17 to 18 weeks of gestational age, medications, including 2 sulfadiazine pills administered every 8 hours, 1 pyrimethamine pill administered every 12 hours, and folic acid administered every other day, were taken by the patient to treat toxoplasmosis. Ultrasound examinations also showed no specific problems, such as brain and liver lesions. At 29 weeks of gestation, 2 sulfadiazine pills were administered every 6 hours, 2 pyrimethamine pills were administered every 12 hours, and 1 folic acid pill was administered daily.

Control ultrasounds for IUGR, brain and liver calcification and fetal growth were all normal. The mother also had no symptoms. The cesarean section was performed at 38 weeks of gestation and a 3550gr male infant was born. Placental pathology was done and no evidence of fetal hypoxia was reported. The infant was carefully examined after birth. His brain, liver, kidney, and other organs were normal. The neonatal eye examination was also performed for toxoplasmosis, which showed no complications until 2 months of age and the infant was examined and controlled for follow-up care.

## Discussion

The high prevalence of toxoplasmosis and the presence of its antibody for years make the interpretation of serological tests difficult. The first

step is to apply anti-toxoplasmosis immunoglobulin. A positive immunoglobulin G titer indicates an infection. A two-week interval examination of immunoglobulin M is recommended for determining the time of infection, and a significant increase or decrease in the immunoglobulin M titer shows that the person has an acute infection and a negative titer test can rule out recent infections. However, the interpretation of a positive titer test is always difficult because immunoglobulin M may be detected 18 months after the acute infection. The major difficulty in measuring immunoglobulin M in pregnancy is the lack of specificity of the tests. If the immunoglobulin M titer is reported positive, the primary blood sample and the sample taken with a two-week interval should be simultaneously tested. If the first sample is taken early in the infection, the immunoglobulin M and immunoglobulin G levels will be higher in the second sample and if both samples are immunoglobulin M negative and immunoglobulin G positive, the primary positive immunoglobulin M will be interpreted as a false positive. Moreover, the avidity test should also be performed for all cases of immunoglobulin G positive and immunoglobulin M positive (11).

## Conclusion

Accurate diagnosis of infection in pregnancy has an effective role in the treatment and, thus, prevention of congenital infection in the fetus. Congenital toxoplasmosis can be prevented or reduced by providing prompt and timely medical care. Preventing toxoplasmosis and paying attention to hygiene are recommended in pregnant women, especially women who lack immunity to toxoplasmosis.

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## Conflict of Interest

The authors declared no conflict of interest regarding the publication of this article.

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