

## C A S E R E P O R T

# Unspecific congenital toxoplasmosis in a two-month-old baby

Sri Wahdini<sup>1</sup>, Ika Puspa Sari<sup>1</sup>, Hanifah Oswari<sup>2</sup>, Agnes Kurniaswan<sup>1</sup>

<sup>1</sup>Department of Parasitology, Faculty of Medicine Universitas Indonesia, Jakarta, Indonesia; <sup>2</sup>Department of Pediatric, Faculty of Medicine Universitas Indonesia, Jakarta, Indonesia

**Abstract.** A two-month-old baby boy diagnosed with unspecific congenital toxoplasmosis was referred by a pediatrician to the Clinical Parasitology referral center at the Faculty of Medicine, Universitas Indonesia. Baby was post-hospitalized in the NICU and required ventilation support for one month. Furthermore, there was history of from various medical conditions, such as intracranial bleeding, convulsion, hypertrophic cardiomyopathy, retinopathy, and renal failure. After two months, there was no significant weight gain, anti-Toxoplasma IgM showed positive results, and anti-Toxoplasma IgM and IgG of the mother were also positive. Baby and mother were successfully treated with pyrimethamine, cotrimoxazole, and folinic acid for one month. At 2 years, there signs of normal motoric, eye, and hearing development with underdeveloped kidneys. Therefore, pre-pregnancy counseling and education aimed at preventing toxoplasmosis during pregnancy should be increased and conducted routinely by health workers or trained cadres to reduce the risk of fetal defects. ([www.actabiomedica.it](http://www.actabiomedica.it))

**Key words:** Congenital toxoplasmosis, baby, unspecific toxoplasmosis

## Introduction

*Toxoplasma gondii* can be transmitted orally from animal tissue cysts and oocysts contaminating water, soil, and food. It can also spread vertically from mother to fetus through blood transfusions or organ transplantation. Pregnancy-related primary infections can potentially harm the fetus and may result in termination. The fetus will be affected more severely by infections contracted in the first trimester than those in the second or third trimester (1). Additionally, the etiological diagnosis of *T.gondii* is being conducted by direct (microscopic and molecular) and indirect methods (immunoassay examination) (2). Prenatal screening for toxoplasmosis is not common in Indonesia, necessitating routine examinations during pregnancy (antenatal care) (3). A case report showed the diagnosis of a baby with unspecific congenital toxoplasmosis following the

results of seropositive anti-Toxoplasma IgG and IgM at the age of two month.

## Case report

A two-month-old baby boy weighing 4600 gr was referred by a pediatrician to the Clinical Parasitology Referral Center at the Faculty of Medicine, Universitas Indonesia. The baby was diagnosed with non-specific toxoplasmosis, abnormal weight gain, and unidentified atopic dermatitis.

The baby was spontaneously born in a private hospital with a birth weight of 3300 grams, groaned, was sent to the Neonatal Intensive Care Unit (NICU), and used a ventilator for a month. During the NICU stay, the baby experienced intracranial bleeding, seizures, hypertrophic cardiomyopathy, retinopathy, acute renal

failure, and difficulty gaining weight. At the age of 7 weeks, the doctor requested anti-Toxoplasma serology testing due to very slow growth. The result showed positive high titer anti-Toxoplasma IgM at 1.90 INDEX (reactive  $\geq 1$  INDEX) and anti-Toxoplasma IgG at 109.6 IU/mL (reactive  $\geq 10.0$  IU/mL). Meanwhile, the Cytomegalovirus (CMV) PCR was negative. The baby was discharged on Continuous Ambulatory Peritoneal Dialysis (CAPD) and referred to the Clinical Parasitology Referral Centre for further examination and treatment of congenital toxoplasmosis. Treatment was conducted at the Clinical Parasitology Referral Center where 2 mg/kg BW/day of pyrimethamine divided into, cotrimoxazole 2x240 mg and folic acid 7.5 mg/day was taken for one month.

Anti-Toxoplasma IgM, IgG, and IgG avidity examination were performed on the mother, and the results showed active *T. gondii* infection with anti-Toxoplasma IgM of 2.4 INDEX, anti-Toxoplasma IgG of 164 IU/mL, and high anti-Toxoplasma IgG Avidity (90 %;  $\geq 60.0\%$ : high Avidity). Furthermore, her anamnesis indicated a history of miscarriage in 2019 at 10 weeks gestation. The mother suffered from type 1 Diabetes Mellitus with a blood sugar level of 321 mg/dl and ketonuria of 3+ on urinalysis, with the baby being the first surviving child from two pregnancies.

The mother has the habit of eating raw vegetables such as basil and cabbage, despite being instructed to avoid close contact with cats and other pets. According to the mother, an obstetrician conducted check-up and a toxoplasmosis test in the first trimester, and the results were satisfactory. However, the test was not repeated in the second and third trimesters. The mother denied experiencing fever, enlarged lymph nodes, or flu-like symptoms during pregnancy.

At the age of 13 weeks, Anti-Toxoplasma serology was re-examined, and the results showed a significant decrease in anti-Toxoplasma IgG (15.0 IU/mL) and a reduction in anti-Toxoplasma IgM 1.10 INDEX. Hematology analysis indicated moderate anemia, with a Hb level of 8.3 g/dL (9.2-12.8 g/dL), hematocrit of 24.7%, and an RBC count of 2.87M/mL. A minor abnormality of liver function was observed, with a direct bilirubin level of 0.4 mg/dL ( $\leq 0.2$  mg/dL), an AST level of 46 U/L (15-37 U/L), and a GGT level of 186

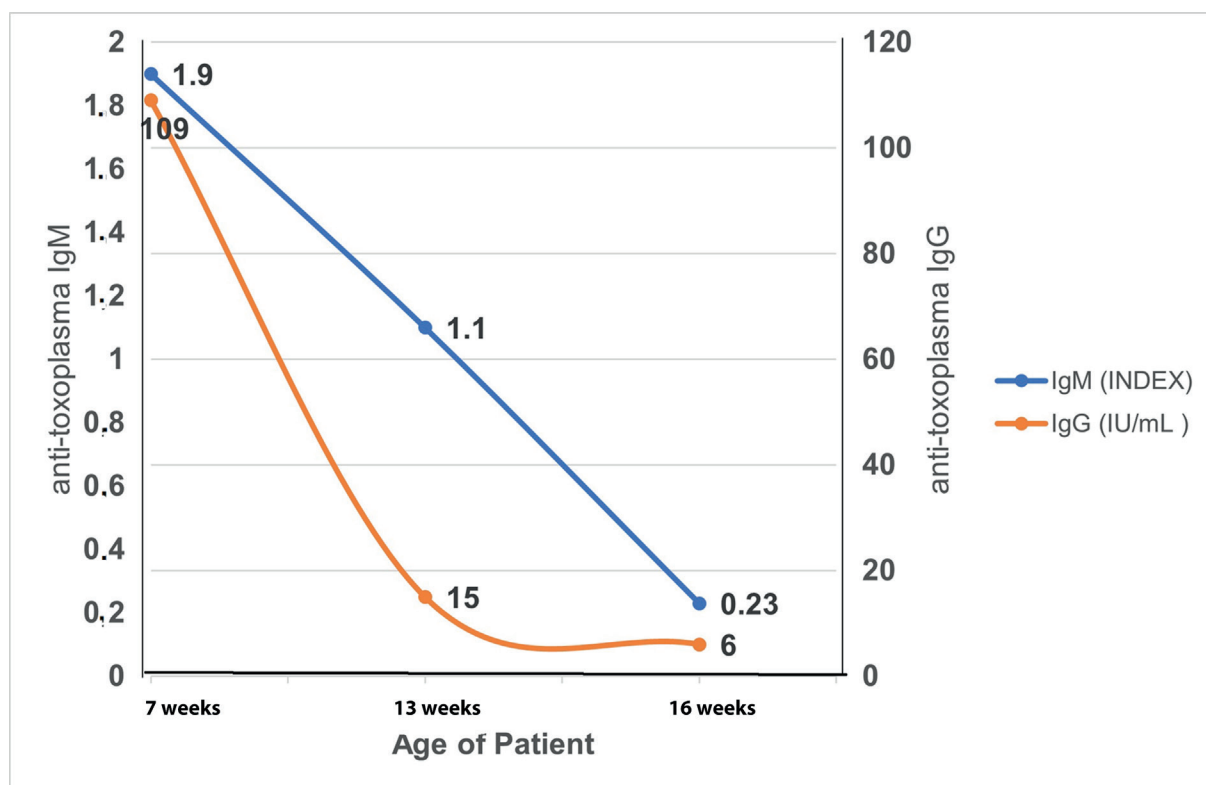
U/L (15-85 U/L). Kidney function showed improvement, as indicated by a serum creatinine level of 1.57 mg/dL (0.7-1.3 mg/dL) and a uric acid level of 7.6 mg/dL (3.5-7.2 mg/dL). Serology tests for HIV, HBsAg, and Anti-HCV were non-reactive. Finally, the ultrasound results of the urinary tract showed kidney swelling and signs of urinary cystitis.

At the age of 16 weeks, the baby showed good development growth, with a significant clinical improvement as the body weight increased to 5300 g, and an appropriate response to sound and vision stimuli was observed. The CAPD was removed, with liver and kidney function being within normal limits. Subsequently, treatment of Toxoplasma was continued for another two weeks, after which anti-Toxoplasma IgG and IgM were conducted showing non-reactive results, as presented in Figure 1.

## Discussion

The specific clinical manifestations of congenital toxoplasmosis, also known as the classic triad, consist of retinochoroiditis, intracranial calcifications, and hydrocephalus. Other signs and symptoms include anemia, seizures, fever, hearing loss, eye disorders, growth disorders, hepatomegaly, splenomegaly, jaundice, lymphadenopathy, maculopapular rash, mental retardation, microcephaly, and spasticity. However, most baby infected intrauterine are born with atypical symptoms (1). The baby was diagnosed with multiple organ failure, and the classic triad of congenital toxoplasmosis was not identified. The most common eye disorder associated with congenital toxoplasmosis was retinochoroiditis, but only abnormalities in the retina were discovered.

The diagnosis of congenital toxoplasmosis was based on signs and symptoms followed by a serological examination of anti-Toxoplasma IgG and IgM from baby and mother's blood. During the acute face of infection, anti-Toxoplasma IgM and IgG increase within 1 to 2 weeks, hence, a serial examination was required to determine the timing and classification (1,4). In this case, the baby's anti-Toxoplasma IgM and IgG were high, with subsequent serial testing revealing a continued rise in IgG levels. Additionally, the mother's



**Figure 1.** Kinetic of anti-Toxoplasma IgG and IgM.

anti-Toxoplasma serology and avidity test suggested the presence of chronic active infection. The high IgG avidity test result postulated that the primary infection could occur more than four months earlier or during the second or third trimester of pregnancy. While the possibility of relapse cases cannot be ruled out due to the unavailability of anti-Toxoplasma serological data before pregnancy, only a history of miscarriage was obtained.

Not all pregnant mothers infected with *T. gondii* exhibit symptoms, and only a small proportion of fetuses show detectable abnormalities on routine ultrasonography. As such, serological screening remains the only means of predicting the presence or absence of infection (6). Screening and serial testing are recommended for pregnant women at risk, including those with a history of previous miscarriage, eating undercooked meat and raw vegetables, and having close contact with cats (7,8). Routine screening can also reduce health costs, as shown in the United States (9) and Austria (10). Early detection through routine

examinations and prompt treatment can reduce the risk of transmission and the severity of congenital infections. Health workers and trained cadres in developing countries should increase and routinely provide pre-pregnancy counseling and education aimed at preventing *Toxoplasma* or other infectious and non-infectious diseases during pregnancy to reduce the risk of fetal defects. Additionally, routine serological examination for anti-Toxoplasma IgM and IgG is required to screen pregnant women in endemic areas. Early diagnosis in newborns with a maternal history of *Toxoplasma* infection can reduce the severity and disability. Therefore, congenital toxoplasmosis case management algorithms are needed as guidelines for clinicians when conducting treatment.

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**Consent Form for Case Report:** Written informed consent was obtained from the patient concerned (January 16 2021).

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## Correspondence:

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Agnes Kurniawan

Department of Parasitology, Faculty of Medicine Universitas Indonesia, Salemba Raya 6

Jakarta, 10430 - Indonesia

E-mail: agnes.kurniawan@ui.ac.id

ORCID: <https://orcid.org/0000-0003-1969-5503>