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JOURNAL OF NURSING AND WOMEN'S HEALTH
ISSN(Online): 2984-8083
Volume-9, Issue-02, Published |10-04-2026|

CLINICAL SIGNIFICANCE OF TORCH INFECTIONS DURING PREGNANCY

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ABSTRACT

TORCH infections—comprising Toxoplasmosis, Rubella, Cytomegalovirus Infection, Herpes Simplex Virus Infection, and other infections such as syphilis—represent a major cause of adverse pregnancy outcomes worldwide. These infections can cross the placenta and lead to congenital anomalies, miscarriage, intrauterine growth restriction, and neonatal morbidity and mortality. This article aims to analyze the clinical importance of TORCH infections during pregnancy, including their epidemiology, pathophysiology, diagnostic approaches, and management strategies. The findings highlight the importance of early screening, prevention, and multidisciplinary care.

Keywords: TORCH, pregnancy, congenital infections, fetal abnormalities, CMV, toxoplasmosis, rubella

INTRODUCTION

TORCH infections are a group of perinatal infections that pose significant risks to fetal development. The acronym TORCH includes:

- T – Toxoplasmosis
- O – Other infections (syphilis, varicella, HIV)
- R – Rubella
- C – Cytomegalovirus Infection
- H – Herpes Simplex Virus Infection

According to the World Health Organization, congenital infections remain a leading cause of neonatal morbidity and mortality, especially in low- and middle-income countries.

These infections are often asymptomatic in pregnant women but can have devastating effects on the fetus. The timing of infection during pregnancy plays a crucial role in determining the severity of fetal outcomes.

MATERIALS AND METHODS

This article is based on a narrative review of scientific literature from PubMed, Scopus, and Web of Science.

Inclusion Criteria:

- Studies published between 2010 and 2024
- Pregnant women with TORCH infections
- Studies focusing on fetal outcomes and clinical significance

Diagnostic Methods:

- Serological testing (IgM, IgG)
- PCR (polymerase chain reaction)
- Ultrasound imaging

RESULTS

1. Epidemiology of TORCH Infections

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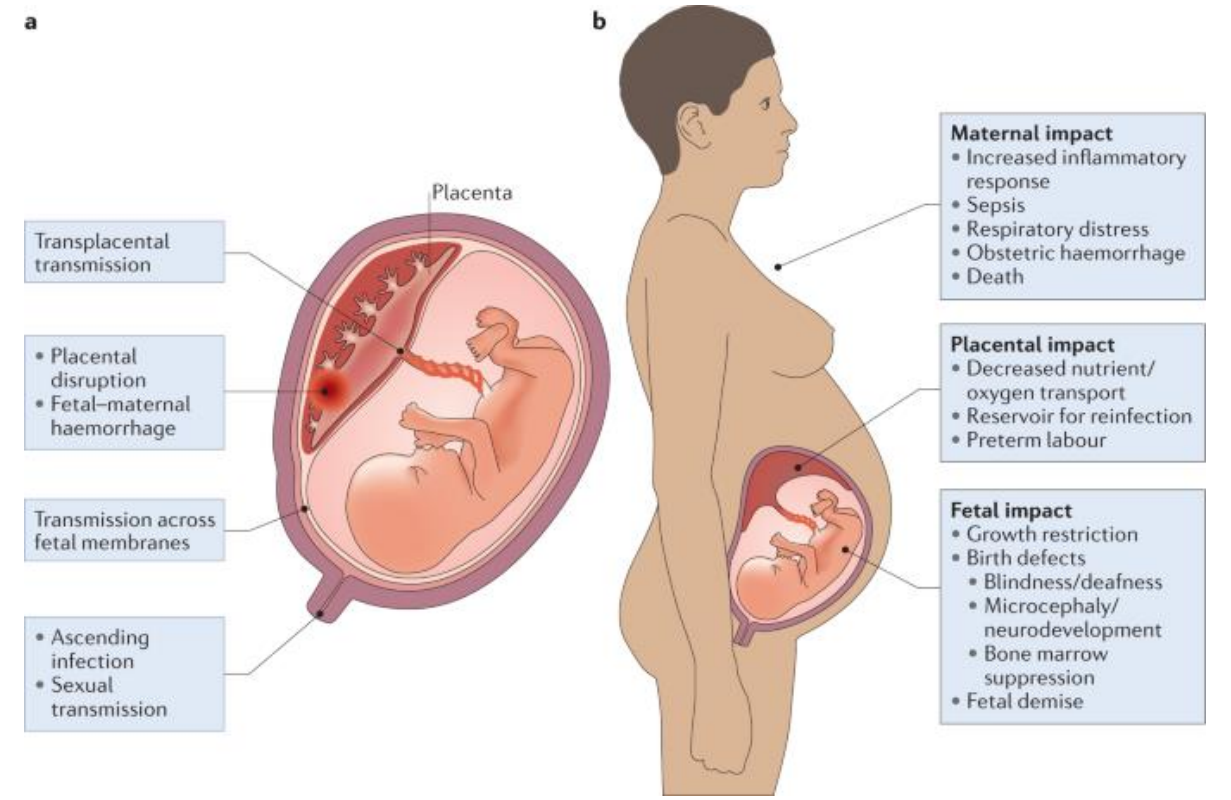
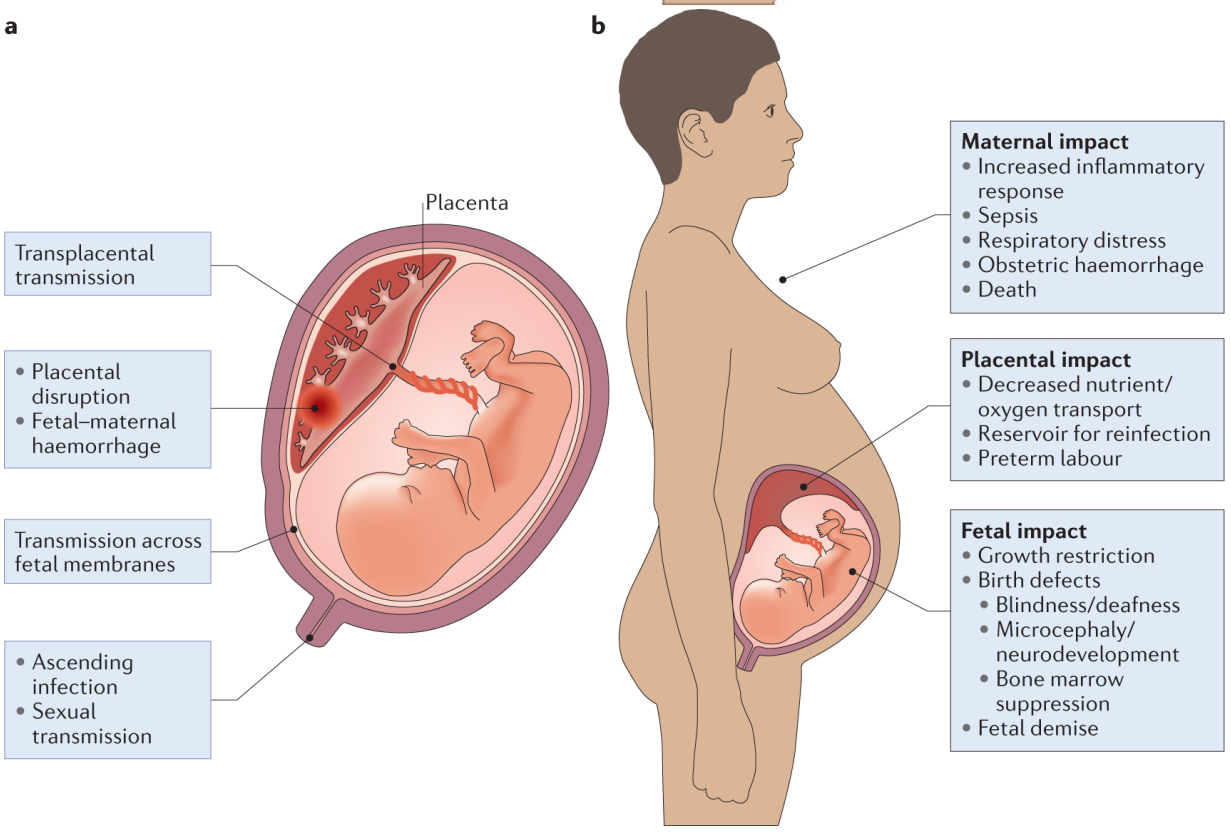
TORCH infections are widespread globally, with varying prevalence:

- CMV: most common congenital infection (~0.5–2%)
- Toxoplasmosis: varies by region
- Rubella: decreased due to vaccination





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2. Pathophysiology of TORCH Infections

TORCH pathogens cross the placenta and infect fetal tissues, leading to:

- Cellular damage
- Inflammation
- Impaired organogenesis

The severity depends on:

- Type of pathogen
- Gestational age at infection
- Maternal immune status

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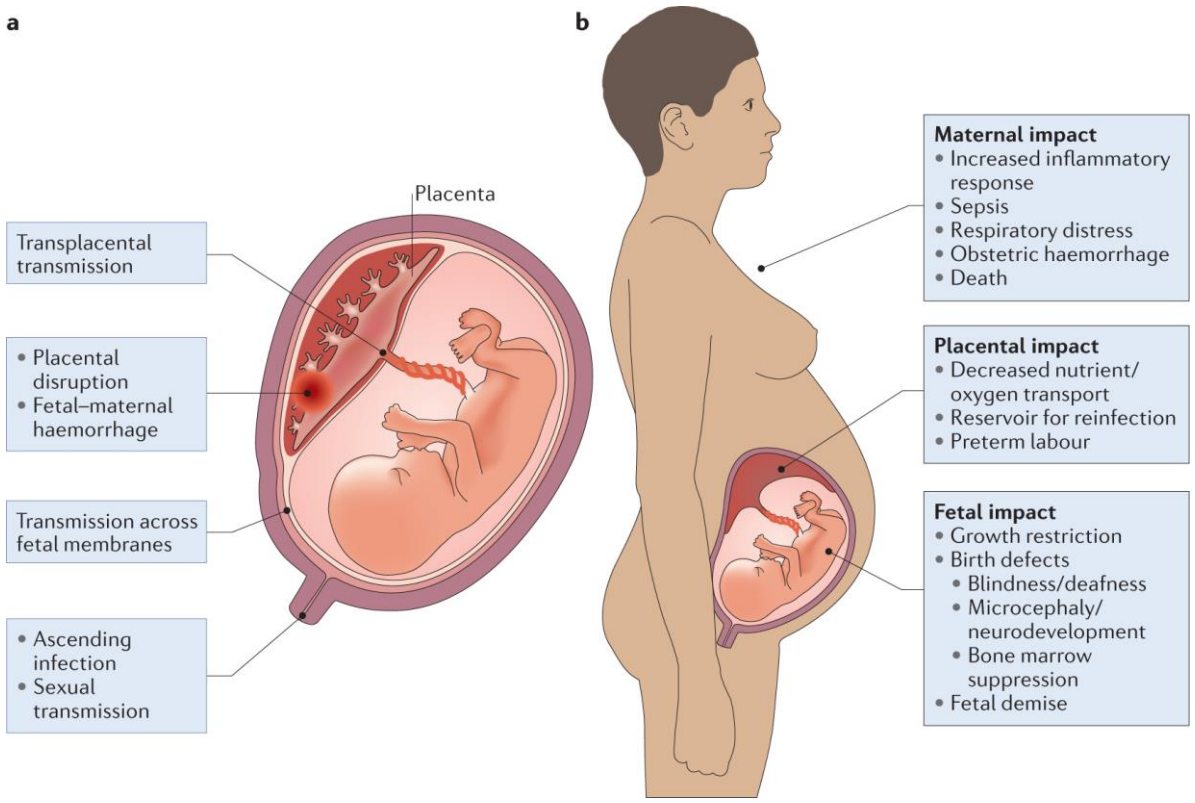

3. Clinical Manifestations

Maternal Symptoms

Often mild or asymptomatic:

- Fever
- Rash
- Lymphadenopathy

Fetal and Neonatal Manifestations

a. Toxoplasmosis

- Hydrocephalus
- Chorioretinitis
- Intracranial calcifications

b. Rubella

- Congenital heart defects
- Cataracts
- Deafness

c. Cytomegalovirus (CMV)

- Microcephaly
- Sensorineural hearing loss
- Developmental delay

d. Herpes Simplex Virus (HSV)

- Skin lesions
- Encephalitis
- Neonatal sepsis

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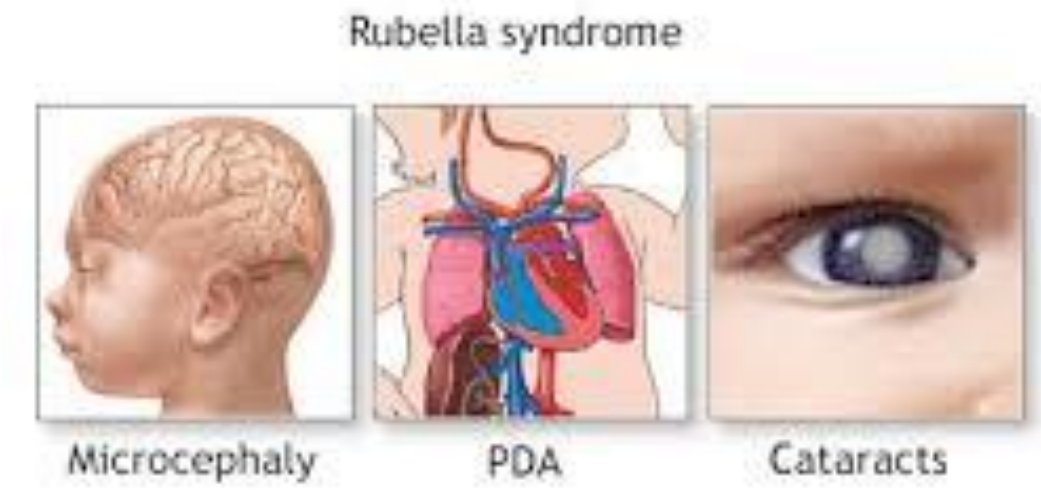

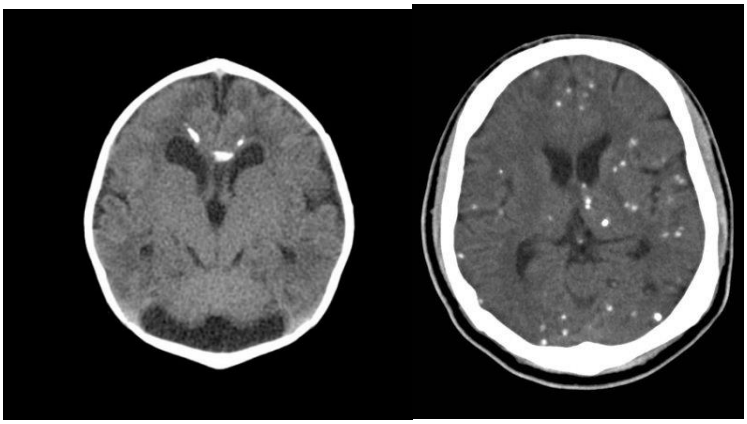

4. Diagnostic Approaches

Laboratory Tests:

- IgM → recent infection
- IgG → past exposure
- PCR → confirmatory

Imaging:

- Ultrasound → fetal abnormalities
- MRI → brain involvement

5. Management and Prevention

Management:

- Antimicrobial therapy (depending on infection)
- Antiviral drugs
- Supportive care

Prevention:

- Vaccination (e.g., rubella)
- Hygiene measures
- Screening during pregnancy

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DISCUSSION

TORCH infections represent a significant clinical challenge due to their often silent maternal course and severe fetal consequences. Early diagnosis is critical but can be difficult due to nonspecific symptoms.

Screening programs and prenatal care play a vital role in reducing adverse outcomes. Public health strategies should focus on vaccination, education, and early detection.

Multidisciplinary management involving obstetricians, infectious disease specialists, and neonatologists is essential.

CONCLUSION

TORCH infections have a profound clinical impact during pregnancy, leading to severe fetal and neonatal complications. Early screening, prevention, and timely management are crucial in minimizing adverse outcomes and improving maternal and fetal health.

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