

## The most common infections in pregnancy and their linked to miscarriage

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World Journal of Advanced Research and Reviews, 2023, 18(01), 600–603

Publication history: Received on 01 March 2023; revised on 13 April 2023; accepted on 15 April 2023

Article DOI: <https://doi.org/10.30574/wjarr.2023.18.1.0627>

### Abstract

Miscarriage is a common occurrence in the life cycle of the woman. Exactly how common this experience is not known exactly. Pregnancy is a complicated physiological process that might lead to negative outcomes and could threaten the women's life or the fetus. Current literature suggests that the cause of RM is only identifiable in up to 40%-50% of cases. Women with Factor V Leiden, prothrombin and methylene tetrahydrofolate reductase mutation have been linking to an increased risk of early, late, and recurrent pregnancy loss. The aim of this review is to highlight the most common infections in Pregnancy and their Linked to Miscarriage.

**Keywords:** Infections in Pregnancy; Miscarriage; Pregnancy loss; Spontaneous abortion

### 1. Introduction

During pregnancy, the pregnant mother undergoes significant anatomical and physiological changes to nurture and accommodate the developing foetus. These changes begin after conception and affect every organ system in the body. In a pregnancy, there can be multiple gestations, as in the case of twins or triplets. Childbirth usually occurs about 38 weeks after conception in women who have a menstrual cycle length of four weeks, this is approximately 40 weeks from the last normal menstrual period [1,2]. There are many complications during the pregnancy period like infection and miscarriage. Recurrent miscarriage (RM), which is also referred to as repeated pregnancy loss (RPL) and habitual abortion, is defined as three or more consecutive spontaneous miscarriages. The experience of repeated pregnancy loss is physically and emotionally traumatic to women who are trying to have children [3,4].

### 2. Incidence of recurrent Spontaneous abortion

Miscarriage or Spontaneous abortion is the most common complication of early pregnancy the frequency decreases with increasing gestational age. Eight to 20 percent of clinically recognized pregnancies at less than 20 weeks of gestation will undergo spontaneous abortion; 80 percent of these occur in the first 12 weeks of gestation The overall risk of spontaneous abortion after 15 weeks is low (about 0.6 percent) for chromosomally and structurally normal fetuses but varies according to maternal age and ethnicity [5-7]. Loss of unrecognized or subclinical pregnancies is even higher, occurring in 13 to 26 percent of all pregnancies. Early pregnancy losses are unlikely to be recognized unless daily pregnancy tests are performed [8]. A study that compared women's bleeding following a pregnancy loss before 6 weeks of gestation with their typical menstruation found that mean bleeding length following a pregnancy loss was 0.4 days longer than the woman's average menses and the amount of bleeding was light [9]. Most cases of recurrent spontaneous abortion remain unexplained and inherited thrombophilia causes account for majority causes among those women [10]. The most pertinent risk for RPL secondary to infection is chronic infection in an immunocompromised patient. There are other potential causes of recurrent pregnancy loss, including infections and sperm problems, although these are less well defined. Lifestyle factors such as smoking, drug use, caffeine and alcohol

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intake, toxin exposure and obesity should be addressed, as these can be contributing factors [11]. Also, high blood high blood pressure considered as risk factor during pregnancy. Hypertension (HTN) or high blood pressure is a cardiac chronic medical condition in which the arterial blood pressure is increased [12]. Elevated blood pressure in young adulthood is an early risk marker for cardiovascular disease. Despite a strong biologic rationale, little research has evaluated whether incremental increases in preconception blood pressure have early consequences for reproductive health [13].

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### 3. Infections

Infective causes of recurrent miscarriage remain speculative. For any infective agent to be implicated, it must be capable of persisting in the genital tract undetected and must cause few maternal symptoms. The pathogenetic mechanisms of these infections are unique [14]. Because of their relatively low virulence, the organisms involved seldom lead to fetal death beyond the earliest stages of embryogenesis. Since the fetus is essentially a graft of foreign tissue in the uterus, the placenta constitutes a protective immunologic barrier that shields the fetus from the mother's humoral and cell-mediated immune responses. This makes the fetus especially susceptible to infection during the first trimester [15,16].

Several microorganisms have been suggested to be associated with spontaneous miscarriage, including *Chlamydia trachomatis*, *Listeria monocytogenes*, *Toxoplasma gondii*, rubella, herpes simplex virus (HSV). Bacterial vaginosis (BV) seems to be associated with premature rupture of membranes resulting in mid-trimester loss and preterm labor more than early pregnancy losses [17]. Repeated second-trimester fetal losses following cervical dilatation or rupture of membranes can be attributed in many cases to bacterial infections, as well as early preterm delivery. These patients should be screened for bacterial vaginal infections and treated if treatment is carried out before 20 weeks of gestation, it succeeds in preventing preterm delivery [18,19].

#### 3.1. Toxoplasmosis

Toxoplasmosis is caused by a protozoan parasite called *Toxoplasma gondii* with long-term living in the humans and animal body. One third of the general population is approximately infected by the Parasite [20]. The seroprevalence studies indicate that toxoplasmosis is one of the most common human infections in many parts of the world. Three different ways of *Toxoplasma* infection induction are: eating the cysts in not fully cooked contaminated meats, using water or food contaminated with oocytes excreted from the feces of cats and transmission from mother, who has been contaminated by the previous ways, to fetus. Although toxoplasmosis is often benign in the women, disease transmission through the placenta can lead to serious consequences such as abortion, still birth, different degrees of mental or physical retardation, hydrocephaly and blindness [21].

#### 3.2. Cytomegalovirus (CMV)

The human cytomegalovirus (CMV) or human herpes virus 5 is one of the major causes of congenital infections. Its clinical manifestations range from asymptomatic forms (90% of cases) to severe fetal damage and, in rare cases, death due to abortion. Furthermore, 10%–15% of the children who are asymptomatic at birth may develop late sequelae, especially hearing defects, after a period of months or even years. Latency following a primary infection (first contact with the virus) may be punctuated by periodic reactivations that give rise to recurrent infections, and in utero transmission may occur during either primary or recurrent infections. Recurrent infections may be due to reinjection with a new strain or to reactivation, but it is likely that most recurrent infections are due to reinjection. The risk of congenital infection is much higher during primary infection [22].

#### 3.3. Rubella

Rubella is a common, normally mild disease that mainly affects children aged 2–12 years. Rubella in pregnancy may cause abortion, stillbirth and congenital anomalies, or congenital rubella syndrome (CRS). Prior to the introduction of rubella vaccine in 1969, the disease was distributed evenly throughout the world. In temperate regions, the incidence was usually highest in late winter and early spring. Minor epidemics occurred every 6–9 years, with major epidemics occurring at intervals ranging from 10 to 30 years [23].

#### 3.4. Listeriosis

Listeriosis is an invasive foodborne infection caused by the motile, gram-positive bacterium *Listeria monocytogenes* (*L. monocytogenes*). The disease affects primarily pregnant women, newborns, and adults with weakened immune systems. Maternal infection during pregnancy is usually a self-limited, nonspecific acute febrile illness of the third trimester and *Listeria monocytogenes* (*L. monocytogenes*) can all negatively affect pregnancy outcomes [24]. Mothers

infected with *Listeria* may be aware of reduced fetal movement and noticeable uterine contractions, or symptoms of threatened preterm birth, such as abdominal pain, vaginal bleeding, or premature rupture of membrane. The non-stress test shows that the baseline of fetal heart beating was over 160 bpm, without any significant variation or only slight variation [25].

### 3.5. Human papillomavirus

Human papillomaviruses (HPV) comprise a group of over 150 different types of small DNA viruses some of which cause common sexually transmitted infections. Sexually transmitted HPV infection has a prevalence rate of 11.7% in the general female population of reproductive age. Persistent infection with high-risk types of HPV (the most prevalent being HPV 16/18 worldwide) have been associated with cervical cancer, and others (HPV 6/11) with genital warts [26]. The pregnant lady who is being a carrier of high-risk HVP also increased odds of having an early miscarriage.

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## 4. Conclusion

There are many infections that can negatively affect pregnancy outcomes. To determine if screening newly pregnant women for infections that may be treated might enhance reproductive outcomes, more study is needed.

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## Compliance with ethical standards

### *Funding*

There is no funding body

### *Disclosure of conflict of interest*

No conflict of interest.

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