

The Role of Rubella Virus Infection Among Women with Spontaneous Abortion in Al-Najaf Governorate

Elham Jawad Kadhum*

Abstract

Background: Rubella virus could cause a spectrum of birth defects known as Congenital Rubella Syndrome (CRS) if the infection occurs within the first or second trimester of pregnancy. Repeated miscarriage is defined as a condition with two or more consecutive abortions before the 20–25 weeks of gestation. Rubella remains to be a severe public health problem in developing countries. Recurrent miscarriage is a multi-factorial disease, which occurs in approximately 1%–2% of women at the reproductive age (Sebastian D et al., 2008). **Aim of Study:** The present study was aimed to determine the Sero-prevalence of rubella infection among women with spontaneous abortion in Al-Najaf city. **Methods:** In this study, obtained blood samples from a total of 205 women with spontaneous abortion were enrolled from Al-Zahraa Hospital for childbirth and children in AL-Najaf Governorate/Iraq between August 2024 and January 2025. From the women aged 14–43 years, the sera were collected and stored at -80°C until uses. Rubella virus infection was diagnosed by the detection of rubella specific IgM, IgG antibodies using indirect Enzyme Linked Immunosorbent Assay (ELISA) as per manufacturer's instructions. Data were analyzed by using SPSS version 21. **Results:** The Rubella virus infection is one of the recurrent abortion causes among pregnant women in our community. In this study, 205 blood samples were collected from women with spontaneous abortion in period between August (2024) and January (2025) from obstetrics and gynecology hospital in Al-Najaf Al Ashraf governorates. The investigation was done by ELISA technology using immunological kits for demonstration of IgG, IgM antibody. Current study showed the existence of Rubella-IgM antibody by 78% compared to 22% detection of Rubella IgG antibody with significant differences. The result demonstration in Figures 1 and 2 shows that once test done in Kufa University Laboratories to give presumptive diagnosis and repeated test after 7–14 days for confirmative identification because of commonly Iraqis carry antibody for these causes and this provide overlapping results (3). This result indicated the Rubella virus infection is acute and recent. Also, the results revealed that the highest rate of miscarriage in women was within the age group (20–25) years by 32%, while the age group (37–32) years gave the lowest percentage where it was 12%, as well as the results of the study showed that 61% of Women had miscarriages in the first trimester of pregnancy. The results displayed that there were significant differences in the number of aborted women in favor of urban areas than in rural areas. **Conclusion:** According to the results of our research, Rubella virus is considered one of the main causes of spontaneous abortion in the province of Najaf in Iraq. This study also reveals the abortion occur in first trimester of pregnancy and then reduce in second and third trimester of pregnancy women in Iraq.

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INTRODUCTION

Rubella is an infectious disease, caused by Rubella virus. which is transmitted mainly by the respiratory system and usually occurs in children and young adults. The infection may remain subclinical or cause a self-specific disease with

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clinical features such as low-grade fever, lymphadenopathy, and rash 1 (Chopra Shashi et al., 2004) [1]. Rubella virus can also be transmitted from infected pregnant women to unborn children. Congenital rubella infection (CRI) has outcomes that include abortion, stillbirth, miscarriage, congenital rubella syndrome (CRS) or asymptomatic infection in the infant (Sebastian D et al., 2008) [1, 2]. The risk of birth defects varies from 10% to 90% depending on the gestational age of the fetus at the time of infection. The occurrence of rubella in the early stage of pregnancy, especially during the first twelve weeks, increases the risk of more severe results. Congenital anomalies are rare if the infection occurs after 20–25 weeks of pregnancy, although fetal infections may occur during pregnancy (Shashi C, et al., 2004) [3, 4].

Abortion means that pregnancy stops or ends before the twenty-five week of pregnancy (the normal pregnancy is 40 weeks), and the child's weight in this case is less than half a kilogram.

Abortion occurs in 15% of pregnancies, and abortion may be early, as the patient is not sure of the occurrence of pregnancy before the occurrence of uterine bleeding. If the abortion is repeated three or more consecutive times, the abortion is called habitual (repeated) abortion, and this occurs in 1/2% of pregnancies [5, 6].

THE REASONS FOR ABORTION

Hereditary abnormalities (abnormal chromosomes) where the cause is more than 50% of miscarriages in the first months of pregnancy, hereditary diseases resulting from an imbalance in the chromosomes, which increases the incidence rate with the aging of the mother, especially with the age of 35. The uterus has been traumatized or operated on high temperature of the patients such as severe flu cases, chest bronchitis, and viral infections. Excessive expansion of the uterine wall due to the twin pregnancy or the large amniotic fluid surrounding the fetus. Lack of oxygen in anesthesia. Some drugs that stimulate uterine contractions, such as the coccinar, used to treat malaria. Patient's high blood pressure, impaired kidney function or diabetes. Reduced amount of progesterone secreted from the yellow body after ovulation, preventing the natural indulgence of an egg fertilized by the wall lining the uterus. Reduced thyroid activity [7–9]. Severe malnutrition. Infection of microbes and parasites. Smoking. Causes of the uterus, such as a lack of uterine growth, congenital malformations in it, or cervical muscle weakness, as this leads to frequent miscarriages after the end of the third month of pregnancy, or the presence of fibrous tumors in the uterus, especially located under the lining of the uterus, or posterior tendency of the uterus of the third degree in the case of non-moderation After the tenth week of pregnancy (Canepa PL, et al., 2009; Jahromi AS, et al., 2010) [5, 6, 10, 11]

METHODS

This study is conducted as a cross-section type. The study involved 205 women at the age range between 14 to 43 years with a history of repeated abortions. The abortion in all the cases was classified as unexplained recurrent miscarriages. All the women were selected from those referring to the Al-Zahraa Hospital for childbirth and children in AL-Najaf Governorate/Iraq for the period from 1/8/2024 to 1/1/2025 [12]. All samples were examined by drawing 5 ml of blood and then blood samples transferred to sterile test tubes were left at room temperature for 30 minutes to coagulate the serum was isolated using a centrifuge at a speed of 1500 r/min and for 5 minutes the and then sera was kept at -20°C until serologic tests for detecting antibodies. Identification of IgG and IgM antibodies against Rubella was performed according to the instructions of specific ELISA kits using Rubella: Kits for IgG and IgM as biomerieux company (Anti-Rubella IgG < 15 IU/ML negative, >15 IU/ML positive, Anti-Rubella IgM <1.5 IU/ML negative, >1.5 IU/ML positive) at a wavelength of 490 nm due to light absorption [13–15].

STATISTICAL ANALYSIS

The results were analyzed by SPSS version 21. They were expressed as mean and standard deviation for quantitative variables and number and percentage for qualitative values. $P < 0.05$ was considered statistically significant.

RESULTS AND DISCUSSION

Maternal infections during the first trimester are adversely associated with stillbirth, spontaneous abortion, or antagonistic neonatal outcome, that encompasses heart disease, cataract and deafness Rubella virus by 62% percentage and mostly causes show IgG, the risk of these virus by infected of pregnant women many infected show symptoms like cold, fever, and rash, many causes show asymptomatic, the risk of this infection may be reduced in next pregnancy because the body form antibody for treated it [16, 17].

Current studies have shown a great role for rubella virus infection in causing miscarriage among pregnant women in our society. This study revealed among a 205-sample collected from woman suffering with miscarriage who referred to obstetrics and gynecology hospital in Al-Najaf Governorate. 100 (48.5%) samples were giving positive results for Rubella antibodies (78% IgM, 22% IgG), result for Rubella antibodies in confirmatory checks to detect the presence of Rub IgG, Rub IgM (8% IgM, 92% IgG) in the diagnosis done by ELISA technology (Figures 1 and 2).

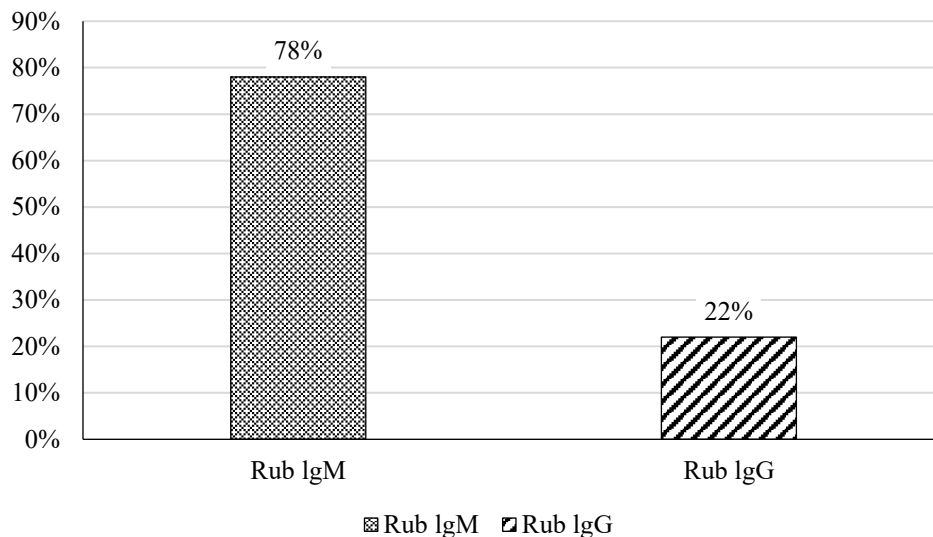


Figure 1. The frequency of rubella IgG, IgM immunoglobulin among women with recurrent abortions.

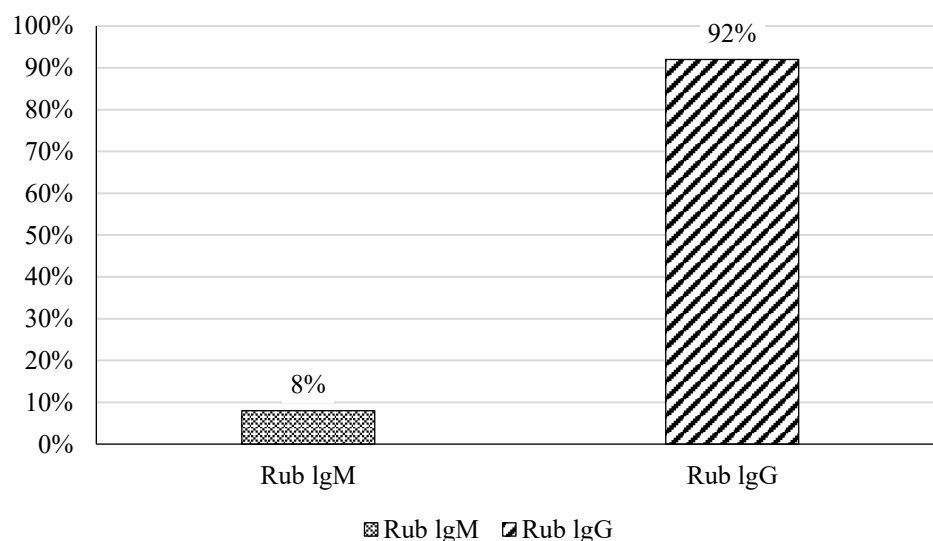


Figure 2. Show the frequency of rubella IgG, IgM immunoglobulin among women with recurrent.

ABORTIONS AFTER TEN DAYS

Serum samples were subjected to initial and confirmatory checks to detect the presence of Rub IgG, Rub IgM. Study revealed about 100 (48.5%) percentage has positive result. The risk of this virus lies in the fact that symptoms are like colds in some cases and the absence of symptoms in many other cases (asymptomatic), the risk of this infection may be reduced in next pregnancy because the body form antibody for treated it [18, 19].

THE RELATIONSHIP BETWEEN THE NUMBER OF MISCARRIAGES AND AGE

Infection with Rubella virus in early pregnancy it is one of the causes of spontaneous abortion. In this study, infection in different age groups was (32%) in the group (20–25 years old), 22% in the (26–31 years old) group, 18% in the group (14–19) years 16% in the group (38–43) years, 12% in (32–37) with significant differences $P < 0.05$ as shown in Table 1 (Figure 3).

Table 1. Number of infections according age groups.

Age group	No. of abort
14–19	18
20–25	32
26–31	22
32–37	12
38–43	16
Total	100
χ^2	11.6 Sign 20–25



Figure 3. Number of infection in people of different age group.

THE RELATIONSHIP BETWEEN INFECTION WITH RUBELLA VIRUS AND ABORTION PERIOD

The results of the current study indicated increased Risk of abortions in the first trimester of pregnancy 61%, followed by the second trimester 33%, while abortions in the third trimester are rare or almost non-existent (Table 2 and Figure 4).

Table 2. The relationship between infection with rubella virus and abortion period.

Time of abortion	No. of infection
First trimester	61
Second trimester	33
Third trimester	6
Total	100
χ^2	12.2 Sign first trimester

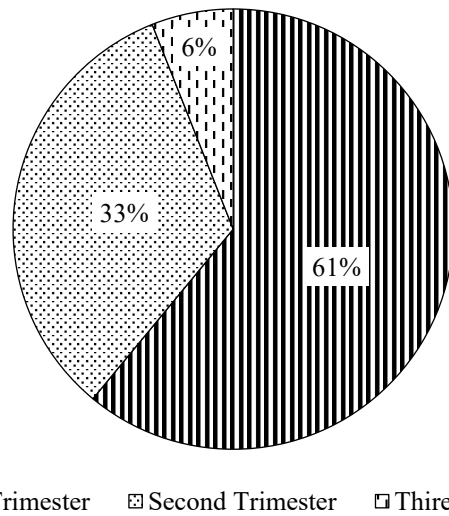


Figure 4. The relationship between infection with rubella virus and abortion period.

THE NUMBER OF MISCARRIAGES ACCORDING TO THE NATURE OF HOUSING

The current study indicates that the highest rate of miscarriage was in the city by 76% compared to the rural area 24% with significant differences in favor of the city this problem may be due to the large number of rural women relying on midwives and it depends on the primitive methods more than visiting hospitals, which leads to lack Record a large percentage of miscarriages that occur in these areas (Table 3 and Figure 5) [20].

Table 3. Miscarriages according to the nature of housing.

Living area	No. patients	Calculated T	Tabulated T
Rural area	24	6.3	1.96 P < 0.05
Urban area	76		

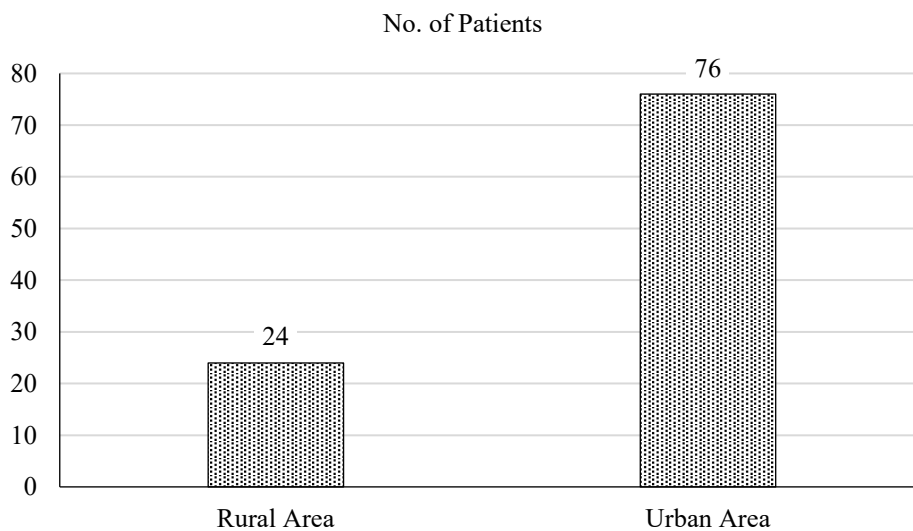


Figure 5. The number of miscarriages according to housing.

CONCLUSIONS

According to the results of our research, rubella virus is one of the causes of spontaneous abortion in Al-Najaf Governorate in Iraq. We also definitely recommend getting vaccinated. The risk of this virus

lies in the fact that symptoms are like colds in some cases and the absence of symptoms in many other cases (asymptomatic). Current studies have shown a great role for rubella virus infection in causing miscarriage among pregnant women in our society.

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