

Seroprevalence of Toxoplasmosis and German measles in Aborted Women in Babylon province

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Abstract

The current study was conducted during September to November 2016, the blood samples were collected from outpatient Clinics to investigate the presence of antibodies of *Toxoplasma gondii* and Rubella virus in women who had an abortion in Babylon governorate by using (Onsite toxo IgG/IgM comboRapid test and Onsite Rubella IgG/IgM comboRapid test). The total number of patients 30 whose their age between 15-35 years. Results showed that 10 samples (33.33%) were positive for Rubella and 3 samples (3.33%) positive for *T.gondii*. The study also showed a significant relationship between the percentage of antibodies of Rubella, *T.gondii*, age, and level of health culture, while there was no significant relationship between the risk factors and the presence of positive sera. The study also revealed that the most miscarriages associated with infection within the first stage of gestation.

Key wards:- *Toxoplasma gondii*, German measles, Aborted Women, Babylon.

Introduction

Toxoplasmosis is a zoonotic disease caused by an intracellular obligate coccidian protozoan called *Toxoplasma gondii*(1). The parasite infects all warm blooded animals and usually develops in immune-compromised hosts(2).It has a complex life cycle with asexual reproduction taking place in diverse tissues of mammals and birds (secondary hosts) and sexual reproduction taking place in digestive epithelium of cats (primary host)(3,4).

The main routes of transmission are ingestion of raw or undercooked meats, exposure to oocyst-infected cat feces, and vertical transmission. In pregnancy, the most common mechanisms of acquiring infection are through consuming raw or very undercooked meats or contaminated water, or exposure to soil (gardening without gloves) or cat litter(5). Transfusion or organ transplantation from an infected person can also transmit the organism(6).

Most pregnant women (>90%) with acquired *T. gondii* infection do not experience obvious signs and symptoms, and spontaneous recovery is the rule (7,8). Only a small proportion will develop clinical signs of the disease(9). In immunocompromised pregnant women, *T. gondii* can cause severe encephalitis, myocarditis, pneumonitis, or hepatitis via acute infection or reactivation of a latent infection (10).

It is one of the main causes of abortion in the pregnant and the occurrence of congenital malformations such as blindness and hearing disorders(11,12,13). Toxoplasmosis leads to a permanent immunity against repeated infection with this parasite, the only infection among the parasitic infections that constitutes this type of immunity(14).

While Rubella (also known as German measles) is an infection caused by the rubella virus, its symptoms are often so mild that more than half of people with the infection do not

even notice that they have contracted it(15).For infections that are serious enough to take hold, the major symptom is a pinkish-red rash that appears 2-3 weeks after exposure to the virus. The rash often starts on the face and moves to the trunk and limbs. After 3 days of the rash, it fades and disappears, hence one of its alternative names - 3-day measles ,other symptoms of rubella include stuffy or runny nose, headache, mild fever, red eyes, testicular swelling, inflammation of nerves, enlargement of lymph and joint aches(16).However, rubella contracted during early pregnancy can cause substantial negative outcomes for the unborn child. This is known as congenital rubella syndrome. If infected during the first trimester, there is a 51% chance that the fetus will be affected. This likelihood drops to 23% if infected 13-26 weeks after conception. Worldwide, there are an estimated 100,000 cases of congenital rubella syndrome every year(15).

The aim of study is to investigate the rate of toxoplasmosis and German measles in sera of women who had abortion in Babylon governorate and to find out which ages are more at risk of infection and to know the relationship between seropositivity and risk factors (sources of drinking water, the presence of animals and the level of education).

Materials and Methods

Collection of samples: 30 blood samples were collected from women who had an abortion, their age ranged 15-35 years who were attended to Babylon educational hospital for women and children in Babylon governorate and laboratories in Jabla area during the period of September to November 2016.Three ml of blood from each woman were collected in gel tubes and centrifuged at 4500 rpm for ten minutes and after the receipt of the serum was preserved at -18°C until the necessary serological tests.

Serological tests: Onsite Toxo IgG/IgM combo Rapid test and Onsite Rubella IgG1/IgG2/IgM comboRapid test (Sanndigo. CA, USA) were carried out in the Microbiology Laboratory in the Department of Biology Sciences, College of Science for women in University of Babylon. The method of test was carried out according to the instructions of the manufacturer and the results of the serological test for toxoplasmosis were read as following:

- 1 - The appearance of a red line on IgM: positive result and recent infection.
- 2-A red line appears on IgG: positive result and an old infection.
- 3-A red line does not show on either IgM or IgG: negative result for infection.

While the results of Onsite Rubella IgG1/IgG2/IgM comboRapid test read as following:

- 1-The appearance of a red line on IgM: positive result and recent infection.
- 2-A red line appears on IgG1: positive result and an old infection and high concentration. .
- 3-A red line appears on IgG2: positive result and old infection and low concentration.
- 4-A red line does not show on either IgM or IgG: negative result for Rubella.

With attention to the presence of control band because its non-appearance signaled that the process of conducting the analysis was wrong.

Results and Discussion

The total number of sera samples used in the study was 30 samples collected from women who had an abortion. The positive cases about 10 cases out of 30 for German measles with ratio 33.33%, and one positive sample for toxoplasmosis with 3.33%, as shown in Figures 1 and 2.

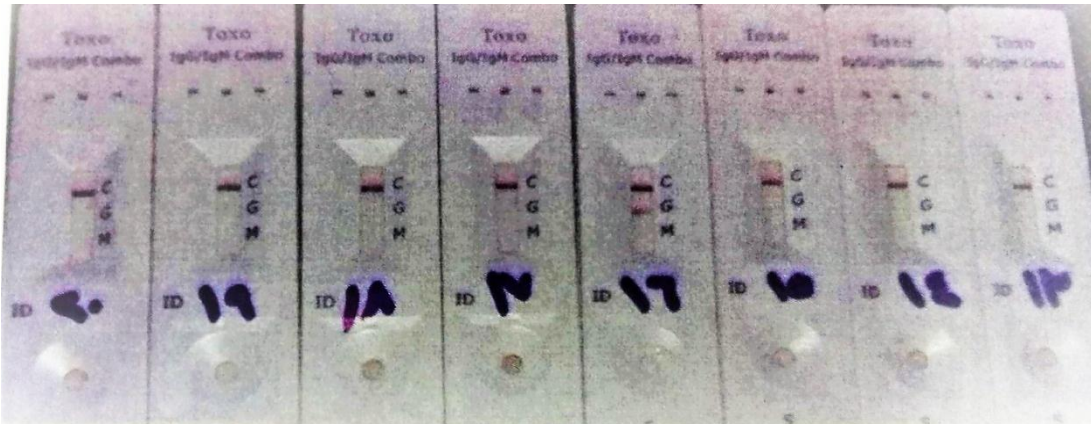


Figure1:The test for *Toxoplasma gondii* (strips 13,14,15,17,18,19,20 negative results, while strip 16 positive result).



Figure2:The test for Rubella (strips 13,14,16,17,18,19,20 negative results, while strip 15 positive result).

The results of the study confirmed the importance of German measles and Toxoplasmosis among the population of Babylon province. These results were similar to the studies carried out in Baghdad and Mosul (17,18) respectively. The prevalence of infection in the current study was 33.3% , it is an approach to the percentages that emerged in the studies conducted in Iraq, including in Tikrit (19), where the ratio was 42.6% and when the results are balanced with the group of women shows that the highest percentage of positive cases within the age group 26-35 and by 46.6% , while the lowest cases in the age group 15-25 and by 26.6% as shown in table1, and this is consistent with many previous studies (17).

Table1: The relationship between toxoplasmosis and German measles in aborted women with age.

Age(year)	No. of samples	Positive samples(%)	Negative samples(%)
15-25	15	26.6%(4 samples)	73.4%(11 samples)
26-35	15	46.6%(7 samples)	53.4%(8 samples)

As for the risk factors :the level of education, sources of drinking water and presence of animals, this study revealed there is no relationship between the infection and level of education and sources of drinking water as shown in table 2.

Table2:Seroprevalence of toxoplasmosis and German measles in aborted women according to risk factors.

Risk factors		Samples No.	Positive samples(%)
Sources of drinking water	Sterile water	27	37.03%(10)
	Non-sterile water	3	33.33%(1)
Presence of cats	Present	11	18.18%(2)
	Absent	19	47.36%(9)
Education level	Educated women	25	44%(11)
	Non-educated women	5	0%(0)

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