



## A survey study for aborted women toward cytomegalovirus and toxoplasma in Babylon City

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### Abstract

The study was directed to detect correlation between demographic data and the abortion then Cytomegalovirus (CMV) and Toxoplasma gondii (T.gondii) roles in cases of abortion as well as study the possible association between the two infections. The blood samples were collected from 100 aborted women who have consulted Imam Sadiq Hospital in AL-Hilla city, and tested for being there of IgM and IgG regarding CMV and Toxoplasma gondii during the period from October 2018 to May 2019. The information were taken for each aborted women included: the age, habitant, history of abortion, occupation, education state, single or recurrent, history of contact to domesticated particularly cats animals, eating history of undercooked meat, fruits, vegetable and drinking unpasteurized milk. 100 blood samples from aborted women were collected and tested for antibodies detection (IgM and IgG) specially for CMV and T. gondii by means of Enzyme- Linked Immunosorbent Assay (ELISA). The sera of all blood samples were taken. A total of 100 sera obtained from aborted pregnant women, 75 of aborted women were cytomegalovirus, while 18 of aborted women were toxoplasma and 7 was negative result. The highest infections prevalence of T.gondii and CMV has been indicated in the age groups (21-25) years old. For aborted women, showed that rural-urban ratio was higher in rural than in urban. From aborted pregnant women, 82% of housewives carry specific anti-T.gondii antibody, while only (18%) of employed women were with specific anti-T.gondii antibody. As well as, depending on repeated abortion of 100 aborted women found 82 were with 1-2 repeated abortion, 11 with 3-4 repeated abortions, 7 with more than four abortions. The infection of CMV and Toxoplasmosis were more prevalent in aborted women. The highest cases of abortion has been showed in the age groups (21-25) years old as well as decrease cases of abortion with increase age. Depending on habitant, prevalence rate of CMV and T.gondii infections were higher in rural than urban for aborted women. As well as, depending on occupation was found that the housewives women had infection higher than employees women.

**Keywords:** cytomegalovirus, toxoplasma gondii, abortion

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### INTRODUCTION

Abortion is one reasonably common kind of pregnancy termination. The average of abortion are altered reliant on race, age, also country; anyhow, three of ten women experience abortion in their life (Jones and Kavanaugh, 2011). Repeated abortion causes between pregnant women in our community began increases in last few years (Hammadi et al., 2017). While greatest abortion reason is unknown, they probably as a result of a complex Mutual effect between age of parents, hormonal, immunological, hereditary, as well as environmental factors (Maria et al., 2019).

Toxoplasma, Herpes, Rubella, and cytomegalovirus are often responsible for abortion, and premature birth,

stillbirth in addition congenital malformations are still producing infection of uterine and can be identified and treated to avoid morbidity and mortality among children born to these mothers (Agrawal et al., 2016). During the first half of gestation, Toxoplasmosis caused abortions besides effects on functions of liver and spleen (Abdul-Hadi et al., 2016). It may causes abortion or severe damage at what time toxoplasmosis of congenital take place early in pregnancy. The rate of IgM antibodies denotes acute infection, IgG antibodies may possibly rise 2 to 4 weeks after infection and gradually increase

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for several weeks after that persist at a low level of rest time, whereas frequent exposure to infection possibly will be the reason of a higher rate of antibodies longer time (Abdulkhaliq et al., 2017).

In the developed world, Human cytomegalovirus (CMV) is the greatest shared cause viral infection of congenital, happening in 0.5–2% of pregnancies in Europe and the United States (Mark, 2013; Ghorbaniparsa, & Ofoghi, (2016). Infectious causes resembling Cytomegalovirus (CMV) is a virus of double-stranded DNA as well as is a member of the Herpesviridae family. About 60% of the people has been exposed to CMV. Monique et al., 2013 showed that that health care authorities performance an vital role in notifying females about infectious diseases of preventable as many respondents reported having received information about listeriosis, CMV or toxoplasmosis from their worker of health care (Monique et al., 2013). In Kurdistan Region of Iraq, (Hussein and Balatay, 2019) mentioned that the prevalence of toxoplasmosis, rubella, and CMV IgM positivity was little in aborted women. The internet, magazines and books were likewise vital causes of information for the defendants (Hussein and Balatay, 2019). Some studies have indicated that written education is fewer effective in the possibility of behavioral alterations compared to when health care workers initiate oral communication of correct behavior to clients (Monique et al., 2013).

The aim of this study was to detect correlation between demographic data and the abortion then Cytomegalovirus (CMV) and *Toxoplasma gondii* (T.gondii) roles in cases of abortion as well as study the possible association between the two infections.

## MATERIALS AND METHODS

### Study Design and Patients

The study was carried out on 100 aborted women during the period from October 2018 to May 2019 in Imam Sadiq Hospital in AL-Hilla city. The data of a questionnaire format was included: the age, habitant, history of abortion, occupation, education state, single or recurrent, history of contact to domesticated particularly cats animals, eating history of undercooked meat, fruits, vegetable and drinking unpasteurized milk.

### The Samples Collection

Collection of 100 blood samples from aborted women. Using a tube of collection (not containing anticoagulants) for collect the blood via venipunctur, permission for thirty minutes for coagulation then centrifugation to obtain the sera. If the serum is not tested directly, it should be refrigerated at 2-8 C. Recommendation for freezing when storage periods more than two weeks. Then the sera tested for the finding of antibodies (IgG and IgM) specially for CMV and to *Toxoplasma gondii* by using ELISA (Bioelisa kit) according to the manufacturer's instructions.

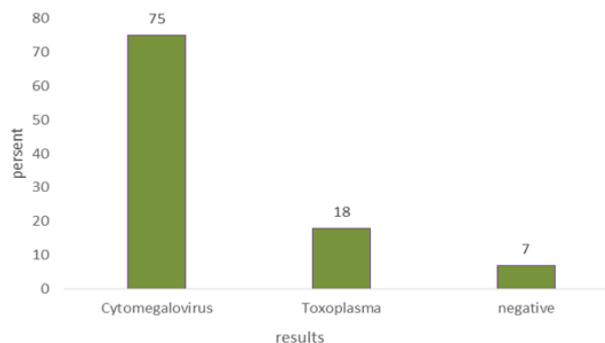


Fig. 1. Distribution of the samples

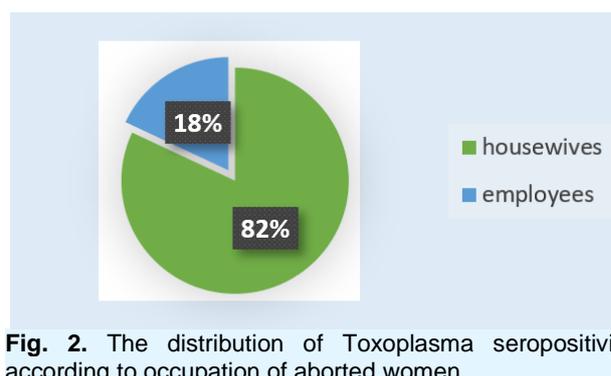


Fig. 2. The distribution of *Toxoplasma* seropositivity according to occupation of aborted women

### Collection of Data

Using interview technique to data collection for questionnaire. Filling the information of the questionnaire by the researchers.

### Ethical Approval

The study was conducted in accordance with the ethical principles that have their origin in the Declaration of Helsinki. It was carried out with patients verbal and analytical approval before sample was taken. For all aborted women, the participation was voluntary and confidential. The study protocol and the subject information and consent form were reviewed and approved by a local ethics committee.

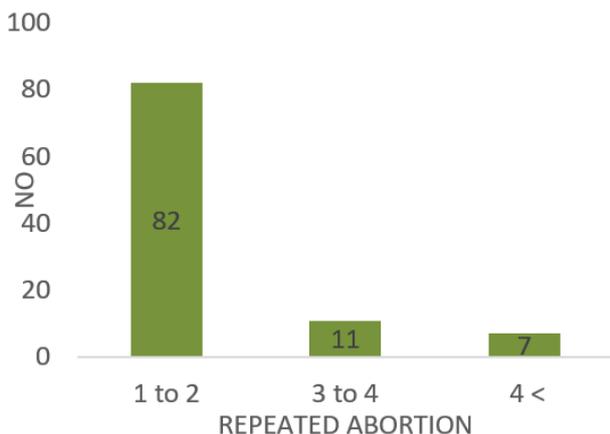
## RESULTS

From the study were found 75 serum of aborted women were cytomegalovirus, while 18 sera of aborted women were toxoplasma and 7 was negative result, from a total of 100 sera of aborted women, **Fig. 1**.

The distribution of *Toxoplasma* seropositivity Depending on occupation of aborted women.

The distribution of *Toxoplasma* seropositivity according to occupation, it was found that (82%) of housewives carry specific anti-T. gondii antibody, while only (18%) of employed women were with specific anti-T. gondii antibody. These findings are clarified more in **(Fig. 2)**.

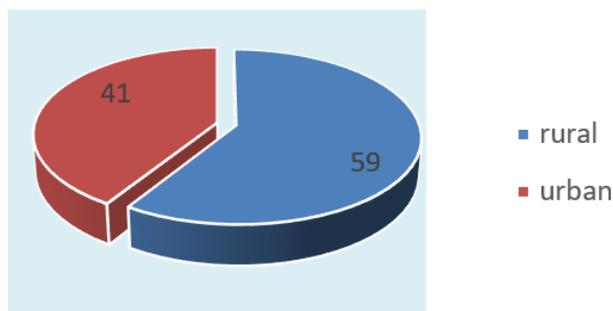
Additionally, the result of **Fig. 3** demonstrates the number of repeated abortion to the studied samples. Out of the 100 positive cases, 82 were with 1-2 repeated



**Fig. 3.** Number of repeated abortion to the population of aborted women

**Table 1.** Age Distribution for Aborted Women

Age group (years)	Aborted patients (%)
≤20	19 (19%)
21-25	30 (30%)
26-30	22 (22%)
31-35	12 (12%)
36-40	10 (10%)
>40	7 (7%)
Total	100 (100%)
<b>Age range (years)</b>	<b>18-42</b>



**Fig. 4.** Geographical Distribution for aborted women

abortion, 11 with 3-4 repeated abortions, 7 with more than four abortions.

**Distribution of Age for Aborted Women**

All women entered in this study were investigated just after abortion in the hospital. The distribution of the cases related to age group were studied. The highest prevalence of CMV infections also *T.gondii* has been found in the age groups (21-25) years old, as well as decrease cases of abortion with increasing age (Table 1).

**Geographical Distribution**

The geographical distribution of 100 aborted women included in the study is illustrated in Fig. 4. The aborted women were classified depending on the home address into rural 59 cases. While the others habitat in urban 41 cases. For aborted women, showed that rural-urban ratio was higher in rural than in urban.

**DISCUSSION**

From the results, it was found that the cases of Cytomegalovirus higher than cases of Toxoplasmosis. The results were compatible with study of (Mark, 2013) who showed that most effected agent for recurrent abortion CMV follow toxoplasmosis in Karbala City (Mark, 2013). This likeness may be regard to availability of the same appropriate conditions such as humidity and temperature that permit to the oocysts viability and extensive infectivity of which act as the main cause for spread of infection. CMV shows great percentage of repeated abortion may be regard to do not show any symptoms in acute causes, it possible stay in the body for long period and move across placenta and by baby feeding and cause this complication to the fetus. In this study less toxoplasmosis showed in 18 cases. This may be regarded to the disease transfer by contaminated food and water, sexually contact, placenta and baby feeding. 70- 60% of women not infected and have antibody for these disease, this disease if infected pregnant women in first months of pregnancy cause congenital malformations or abortion in last stage of pregnancy (Schleiss, 2011).

From the results it was found that the housewives are exposed to infection more than employees. The result was matched with study of (Salman, 2014) who mentioned that Toxoplasma high incidence of household wives 36.59%. While the study of (Park et al., 2017) found that occupied females had significantly greater for miscarriage in 18 of the 21 industries. Increasing number of employed females rises the chance that females possibly will exposed to numerous working hazards in pregnancy. Numerous working managers of reprotoxic (Having a toxic effect on the process of reproduction), such as physical, chemical agents, suspicious factors, in addition to ergonomic agents, have been observed and proposed to negatively effect of females generative health (Nyholm and Schleiss, 2010).

On top of these influences, shift work, hours of work, besides occupation tension have been proposed to affect the reproductive consequences of females (Mark, 2013). This finding might be regard to the fact that they were likely to be of low education about the routes of transmission and reflects houses contamination thresholds with feces of cat (oocyst). Other than the fact that females are more interaction to oocyst via meat, vegetable, thus toxoplasmosis predominant is greater than other individual (Salman, 2014). As well as the results may regard to the highest number of housewives in comparing to employees who included in these studies.

The results were compatible with study of (Mark, 2013) who was found that the uppermost abortion in between the age (20-24) and this reduce when become increase of the age (Mark, 2013). The results were also

compatible with study of (Andiappan et al., 2014) who mentioned that the common of the pregnant women infected with *Toxoplasma* were in the age group of 20–29 years (Andiappan et al., 2014). While study of (Maria et al., 2019) mentioned that the miscarriage risk was lowermost in, females old 25-29, then increased quickly after oldness 30, attainment 53% in females old 45 then over. Other study of (Al-Jubori et al., 2015) mentioned that the abortions were mostly practiced among the youngest age groups from (26-30) year in Babylon city/Iraq. This may be related to that most of women have high rate of reproduction with this age.

## CONCLUSION

The infection of CMV and Toxoplasmosis were more prevalent in aborted women. The highest cases of abortion has been showed in the age groups (21-25) years old as well as decrease cases of abortion with increase age. Depending on habitant, prevalence rate of CMV and *T.gondii* infections were higher in rural than urban for aborted women. As well as, depending on occupation was found that the housewives women had infection higher than employees women.

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