Detection of Toxoplasma gondii among women at Babylon governorate
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Abstract:
The aim of this study to estimate the rate of infected with T. gondii in women from rural area and urban in Babylon governorate. Serum samples are collected from (121) women attending to Babylon maternity hospital and private laboratories in Babylon city, the women age took randomly from 20-45 years old this serum samples are tested by min-vidas for detected on Antibody against T. gondii by IgG and IgM. The result showing (47samples) from total samples (121) are infected with T.gondii. otherwise the study showed the compartment between the percentage of infected women in rural area and urban, showing highly infected percentage in rural area (59%) compare with urban (41%) with highly statistical significant differences. Also the result showing the Abortion percentage highly incidence in pregnancy period 3rd, 4th and 5th month respectively with highly statistical significant differences. From the other hand the result showing the abortion highly incidence in the with age below 20 years old 60%, 21-25years 49%,26-30 years old 48% and 40% for above 31 years old but without statistical significant differences. Otherwise the result showing highly infected women within age 26-30 years old than the women within 21-25 years old respectively and showing highly statistical significant differences.

Key words : Toxoplasmosis , Women abortion, Seroprevalence.

Introduction
Toxoplasmosis is a parasitic disease caused by the protozoan Toxoplasma gondii. (Sukthana.,2006),( Paschale etal.,2007). Up to one third of the world's human population is estimated to carry a Toxoplasma infection (Jones etal.,2007). In humans, the incubation period is 10 to 23 days after ingesting contaminated meat, and 5 to 20 days after exposure to infected cats,( Paschale.,2007). Congenital toxoplasmosis is a special form in which an unborn child is infected via the placenta (Torda ., 2001). A positive antibody titer indicates previous exposure and immunity and largely ensures the unborn baby's safety(Ho-Yen DO etal.,1992). Despite these risks, pregnant women are not routinely screened for toxoplasmosis in most countries, (Jones etal.,2007),( Paschale.,2007).
Treatment is very important for recently infected pregnant women, to prevent infection of the fetus (Šmahel.,2002). Since a baby's immune system does not develop fully for the first year of life, and the resilient cysts that form throughout the body are very difficult to eradicate with anti-protozoans, an infection can be very serious in the young( Henriquez.etal.,2009 ). The detection
of Toxoplasma-specific antibodies is the primary diagnostic method to determine infection with Toxoplasma. Toxoplasma antibody detection tests are performed by a large number of laboratories with commercially available kits (Lachaud, et al., 2000).

The enzyme immunoassay method with fluorescence detection IFA and EIA tests for IgG and IgM antibodies are the tests most commonly used today. Persons should be initially tested for the presence of Toxoplasma-specific IgG antibodies to determine their immune status. A positive IgG titer indicates infection with the organism at some time (Slawska et al., 2005). If more precise knowledge of the time of infection is necessary, then an IgG positive person should have an IgM test performed by a procedure with minimal nonspecific reactions, such as IgM-capture EIA. A negative IgM test essentially excludes recent infection, but a positive IgM test is difficult to interpret because Toxoplasma-specific IgM antibodies may be detected by EIA for as long as 18 months after acute acquired infection (Thiebaut et al., 2007).

A major problem with Toxoplasma-specific IgM testing is lack of specificity. Two situations occur frequently: i) persons with a positive IgM but negative IgG, and ii) individuals with positive IgG and IgM results (Slawska et al., 2005). In the first situation, a positive IgM result with a negative IgG result in the same specimen should be viewed with great suspicion; the patient's blood should be redrawn two weeks after the first and tested together with the first specimen (Lachaud, et al., 2000). If the first specimen was drawn very early after infection, the patient should have highly positive IgG and IgM antibodies in the second sample. If the IgG is negative and the IgM is positive in both specimens, the IgM result should be considered to be a false positive and the patient should be considered to be not infected (Thiebaut et al., 2007). In the second situation, a second specimen should be drawn and both specimens submitted together to a reference lab which employs a different IgM testing system for confirmation. Prior to initiation of patient management for acute toxoplasmosis, all IgG/IgM positives should be submitted to a reference lab for IgG avidity testing (Slawska et al., 2005).

If the patient is pregnant, and IgG/IgM positive, an IgG avidity test should be performed. A high avidity result in the first 12 to 16 weeks of pregnancy (time dependent upon the commercial test kit) essentially rules out an infection acquired during gestation (Lachaud, et al., 2000). A low IgG avidity result should not be interpreted as indicating recent infection, because some individuals have persistent low IgG avidity for many months after infection. Suspected recent infection in a pregnant women should be confirmed prior to intervention by having samples tested at a toxoplasmosis reference laboratory (Slawska et al., 2005). If the patient has clinical illness compatible with toxoplasmosis but the IgG titer is low, a follow-up titer two to three weeks later should show an increase in antibody titer if the illness is due to acute toxoplasmosis, assuming the host is not severely immunocompromised (Lachaud, et al., 2000). Newborn infants suspected of congenital toxoplasmosis should be tested by both an IgM- and an IgA-capture EIA. Detection of Toxoplasma-specific IgA antibodies is more sensitive than IgM detection in congenitally infected babies (Slawska et al., 2005). None of the current commercial assays offered in the United States have been cleared by the Food and Drug Administration for in vitro diagnostic use for infants; consequently, all specimens from neonates suspected of having congenital toxoplasmosis should be sent to the Toxoplasma Serology Laboratory, Palo Alto, CA which has the most experience with infant testing (Lachaud, et al., 2000).

Serological determination of active central nervous system toxoplasmosis in immunocompromised patients is not possible at this time (Slawska et al., 2005). Toxoplasma-specific IgG antibody levels in AIDS patients often are low to moderate, but occasionally no specific IgG antibodies can be detected. Tests for IgM antibodies are generally negative.
Several commercial kits for *Toxoplasma* serologic testing are available. However, the sensitivity and specificity of these kits may vary widely from one commercial brand to another (Lachaud., et al. 2000). This is of concern because serology results can influence decisions on continuation or termination of pregnancies (Slawska et al., 2005).

The aim of this study to compare between geographical distributions of urban and rural area, month of pregnancy and abortion percentage also Abortion percentage depending on mother age, and effected women depend on age.

**Material and Method**

**Samples Collection:**
Totally one hundred twenty one pregnant women serum samples who are collected from the women visited Babylon maternity and pediatrics hospital, diagnosis lab and private clinics for obstetrics and gynecology are took to examined for toxoplasmosis since 2011 to 2012 from Babylon governorate

1. Serological Testing:
Samples are examined for toxoplasmosis by using mini-Vitek Immuno Diagnostic Assay System (vidas)

- Serum anti Toxp IgM Ab titer: IU/ml
- Serum anti Toxp IgG Ab titer: IU/ml

**Interpretation**

- Negative
  - IgM less than 0.55 IU/ml
  - IgG less than 4.0 IU/ml

- Equivocal
  - IgM between than 0.55 - 0.66 IU/ml
  - IgG between than 4.0 - 8.0 IU/ml

- Positive
  - IgM More than 0.65 IU/ml
  - IgG More than 8.0 IU/ml (Paul., 2005)

2. Statistical analysis:
SPSS System are use for analyze the data by using Z test.

**Results**
The study estimate the rate of infected with *T. gondii* in women from Babylon governorate by using serum samples are collected from 121 women attending to Babylon maternity hospital and private laboratories in Babylon city, the women age took randomly from 20-45 years old this serum samples are tested by min-vidas for detected on Anti body against *T. gondii* by IgG and IgM, the result showing 47 samples from total samples 121 are infected with *T.gondii.*

The compartment between the percentage of infected women in rural area and urban, showing highly infected percentage in rural area (59%) compare with urban (41%) (table 1, figure 1) with highly statistical significant differences which is 0.180 at 0.05 probability by using Z test.

The result also showing the Abortion percentage highly incidence in pregnancy period 4th month where compare with another months of pregnancy (figure 2) with highly statistical significant differences which is 0.248 at 0.05 probability by using Z test.

While the result showing the abortion incidence in the women with age below 20 years old 60%, 21-25 years 49%, 26-30 years old 48% and 40% for above 31 years old but without statistical significant differences at 0.05 probability by using Z test. (figure: 3).
Otherwise the result showing highly infected women within age 26-30 years old (50%) than the women within 21-25 years old (42.4) respectively (figure 4) and showing highly statistical significant differences which is 0.180 at 0.05 probability by using Z test.

Table 1; Geographical distributions between the percentage of infected women in urban and rural area

<table>
<thead>
<tr>
<th></th>
<th>Rural area</th>
<th>Urban</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of women</td>
<td>78</td>
<td>43</td>
<td>121</td>
</tr>
<tr>
<td>No. of infected</td>
<td>34</td>
<td>13</td>
<td>47</td>
</tr>
<tr>
<td>percentage</td>
<td>43.5%</td>
<td>30.2%</td>
<td>(38.8)%</td>
</tr>
<tr>
<td>Percentage / total</td>
<td>%59</td>
<td>%41</td>
<td></td>
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</tbody>
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Discussion:

This study is the second study in Babylon governorate for infected with T. gondii parasite, the first study in (Abe – Garag region at Babylon city) (Waleed 2000) , this study take sample from the all Babylon governorate randomly.

The infected percentage in this study 38.8% its higher than Abe-Garag recorded 36.76% (Waleed 2000) by using Latex Agglutination Test (LAT) test otherwise its similar to the study of Baghdad infection with toxoplasm 39% (Niazi et al, 1988) by using (LAT) , from the other hand less than the study of Najaf 58.6% (Kifah ,2004 ) by using (LAT) test. While in the neighbor country such as Saudi Arabia 29.4% (AL-Harthi et al ,2006 ), Kuwait 58.2% (AL-Nakib , 1982 ) and in Jordan 37% ( Morsey&Michaeal , 1980 ).

This study compare between the urban and rural area this initiate to low social learning ,low education, bad feeding habit and breeding cattle and high number from stray cats,this study showing the infection with toxoplasma parasite still incessant in our social in staid of the development of education ,and showing the highly infected in the rural area (Dupouy-Camet etal ., 2003 ; Remington etal ., 2001 ; Jenum etal ., 1998 )
Figure 1: Geographical distributions between the percentage of infected women in urban and rural area.

Figure 2: Abortion percentage compare with incidence in pregnancy period.

Figure 3: Abortion percentage depending on mother age.
References


Kifah F.H. 2004 Sero-epidemiological study of toxoplasmosis among pregnant women with gynecological problemes in Najaf city. (Athesis)


