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The prevalence of TORCH infection in Mosul

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ABSTRACT

Background: TORCH infection complex during pregnancy has bad obstetric outcomes starting from low birth weight to congenital anomalies, sensory neural deafness, mental retardation, cerebral palsy and sometimes to fatal outcomes like abortion and still birth. As these diseases remain mostly asymptomatic these are rarely tested during pregnancy, serology is the mainstay of diagnosing these infections.
Aim: the aim of the study was to identify the prevalence of TORCH infection among pregnant women in Mosul city.
Methods: A cross sectional study was undertaken to estimate the burden of these infections among pregnant women in Mosul city. A total number 300 antenatal cases were screened ELISA test for the presence of IgM antibodies against toxoplasma, rubella virus, cytomegalovirus (CMV), herpes simplex virus (HSV)
Result: It was found that herpes is the most predominant infection being positive IgM in 25,3% of pregnant women having bad obstetric history and 21,4% of pregnant women with no bad obstetric history ,followed by a combination of infection between CMV and Herpes 20,5% among women having BOH and 13% among pregnant women with no BOH, Toxoplasmosis IgM positive found in 12,32% of pregnant women with BOH and 7,8%of pregnant women with no BOH, Rubella IgM positive in 10,3% of pregnant women with BOH and 2,6% among those with no BOH. Those pregnant women with BOH had 28.1% of all negative IgM titer, while 48.7% of pregnant women with no BOH had all negative IgM titer.
Conclusion: This study showed that most of the infections have occurred by 18years of age and before or during the 1st pregnancy. It is less common among the antenatal cases that have better education and have spouses servicing in private or government sectors signifying the more health and sanitation awareness among this group.
Key word: TORCH, Congenital infection, Toxoplasma, Rubella, Cytomegalovirus infection, Herpes simplex, bad obstetric history

1. INTRODUCTION

TORCH infection complex comprises of infections Caused by toxoplasma gondii, rubella virus, Cytomegalovirus (CMV) & herpes simplex virus. These infections Transmissible in utero at several stages of pregnancy and Are associated with adverse fetal outcomes and Reproductive failure. Congenital infection by Toxoplasma is particularly severe if the mother acquires the infection During first or second trimester of pregnancy [1]. Rubella may Have an outcome on the reproductive health and Fetal outcome, in congenital rubella woman infected during the first 16 weeks of pregnancy passes the virus to the fetus through the placenta, this infection in the fetus causes miscarriage, stillbirth, or multiple, sever birth defects. The earlier in pregnancy the infection occurs the greater the risk of sever abnormalities like sensory neural deafness, congenital heart Disease, microcephaly, mental retardation cataract and Blindness [2]. Cytomegalovirus (CMV), a virus Belonging to the Herpes viridae family, about 90% of primary infection are asymptomatic in mother, infants showed various complications such as optic atrophy, microcephaly, hypotonia, intracranial calcification, decrease hearing, pneumopathy and thrombocytopenic purpura [3]. Herpes genitals is one of the most common sexually transmitted diseases It caused by herpes simplex Virus type1,2[4]. Herpes simplex virus type 2 (HSV-2) is the major cause of genital herpes. The acute infection during pregnancy may Be responsible for disseminated neonatal herpes with a Case fatality of as high as 80%, and may Be a cause of various congenital anomalies in the fetus [1].

The diagnosis of TORCH infections is mainly based upon the presence of serum antibodies, Particularly IgM in patient's serum.

Data from pregnant women attending Al-Salam hospital, public health laboratory and al-Khansa hospital in Mosul city show Considerable variation depending upon the age, socioeconomic status, life style of the subjects, past obstetric history etc. No baseline data of these infections in the local population is available especially after the war of 2016 against ISIS. Hence this research project is conceived with an aim to assess the burden of these infections among pregnant women in Mosul city.

METHODS

A cross-sectional study was carried to assess the sero-prevalence of TORCH infections among pregnant women when they visit Al-Salam hospital, Al- Khansa hospital and public health laboratory during the period From1st of May 2019 to 30th of November 2019. A sample of 300 pregnant women was recruited into the Study during their antenatal care visit to the hospital. They were selected randomly. All the sample were tested for the TORCH infections by using Enzyme Immunoassay test kit for Toxoplasma gondii IgM, Rubella virus IgM, Cytomegalovirus IgM and Herpes simplex virus IgM, all kits from Bio check/USA company.

Due care was taken to maintain the confidentiality of the participants, due approval from institutional ethical committee (IEC) was obtained, permission from medical officer of the concerned area were taken prior to actual study. After the objective of the study was explained to them and informed consent was obtained, data were recorded in a pretested pre form/study questionnaire which contained the demographic data, socioeconomic and literacy status, obstetric history etc. The blood specimens collected from the subjects in the field were transported to the microbiology laboratory where serum was separated and tested for presence of IgG and IgM antibodies against the Toxoplasma, Rubella, Cytomegalovirus, Herpes simplex virus by ELISA Method.

The results were recorded in laboratory Registers and analyzed and the laboratory test reports were dispatched to the patients.

RESULTS

In our study, out of 300 pregnant women a total of 146 (48.7%) have BOH, 154 (51.3%) without BOH. (Table1) demonstrate the age group distribution of pregnant women and relation to their past obstetric history.

Table 1: age group distribution of pregnant women with their past obstetric history

Category	Bad obstetric history			
Age group in years	Present	Absent	No.	%
≤ 18	18(39.1)	28(60.9)	46	15.3
18-30	79(41.8)	110(58.2)	189	63
≥ 30	49(75.4)	16(24.6)	65	21.7
Total	146(48.7)	154(51.3)	300	100%

(Table 2) demonstrate the sero-prevalence of different of TORCH infections among pregnant women in relation to their past obstetric history. Out of 146 pregnant women with BOH, a total of 37(25.3%) were positive for IgM Herpes, while 30(20.5%) were positive IgM herpes and CMV as a dual infection in the same pregnant woman.

Table 2: The relation between IgM positive lab result and the past obstetric history of a pregnant women

Category IgM result	BOH N (%)	No BOH N (%)	No.	%
All negative	41(28.1)	75(48.7)	116	38.7
Only Toxoplasma	18(12.3)	12(7.8)	30	10
Only Herpes	37(25.3)	33(21.4)	70	23.3
Herpes with CMV	30(20.5)	20(13)	50	16.7
Only Rubella	15(10.3)	4(2.6)	19	6.3
Only CMV	5(3.4)	10(6.5)	15	5
Total	146(48.7)	154(51.3)	300	100%

DISCUSSION

Limited data is available regarding the prevalence of TORCH infections among pregnant women in general and particularly in Mosul, Most of the studies in Iraq have related the sero-revalence to presence of bad obstetric history. Only few studies have followed up the cases till the obstetric outcome, rarely any study has continued to follow up to examine the long term complications. As most of the cases remain asymptomatic, determination of maternal antibodies in serum is used to detect infection.

As the congenital complications are mostly associated when mother is infected during pregnancy, rather than before, detection of primary or recent infection is of paramount importance, though direct methods by detecting microbial

components like nucleic acid, antigen etc. in patient confirms the diagnosis they are rarely done due to non-availability of standard methods, non-accessibility and cost factors.

Infection with any of TORCH diseases during pregnancy may reach the placenta and the fetus and can led to miscarriage, stillbirth, or a birth of a child with serious defects [5].Detection of specific IgM is the method used all over the world to detect acute infection, persistence of IgM for long periods poses problems in distinguishing acute from chronic infection, which is of crucial importance in pregnancy.

In our study Herpes, CMV were the most prevalent pathogen among pregnant while in other study in Kirkuk/ Iraq 2014 where CMV and Rubella were the most prevalent pathogen among pregnant followed by Toxoplasma, the lowest rate was for HSV[6].

Most of positive cases in current research were appeared among women of 1-12 years duration of marriage, on one hand this may because these years is child bearing age, which is after that the rate of pregnancy will decline among women, on the other hand most of these infections are transmitted sexually or by oral and body fluid [7,8].

The result of TORCH screening tests was not differed significantly after the year of 2014, but there was significant differences between the frequency of the microorganisms included in TORCH screening, the highest was for herpes with rates of 23.3%, more frequency was observed for a combination of Herpes with CMV with rate of 16.7% [6].

TORCH infections are prevalent among pregnant women in Iraq and probably they are the causative agents of abortion and infertility found among them, therefore it's better for pregnant woman or those planning to become pregnant to be tested for TORCH infections, and vaccinated against Rubella, Cytomegalovirus, Herpes simplex virus and Toxoplasma to grantee her health as well as her baby [6].

CONCLUSION

Our study shows the burden of TORCH infection among pregnant women during their antenatal care visits, the actual effect of these infections on obstetrics outcomes are mostly in apparent initially or may be attributed to some other factors, but the study is limited in that there is no enough time for follow Up these cases till their obstetric outcome, which would Have given some idea about the actual burden in the Community. Though detection of specific IgG and IgM antibody is Used to differentiate acute infection, persistence of IgM For long periods poses problems in distinguishing acute From chronic infection which is of crucial importance in Pregnancy. Other methods like molecular studies Including PCR are one option to differentiate active Infection.

In Iraq regular health awareness programs and vaccination against Rubella will help in bringing down the prevalence rate of these infections. There are Different studies Have different data regarding the burden of infection, But there is agreement In that the parasite is transmitted more frequently during The latter part of gestation but the disease is more severe If infection is acquired during the first and second Trimesters and the women who are seropositive before Conception, have least risk to their babies. Although most congenitally infected children are Asymptomatic at birth, many will develop some Symptoms later in life [6].

Looking at the large number of antenatal case in the Country with their lower socioeconomic status and rural Set up, it will be a difficult to screen all cases for TORCH infections, So we suggest to screen all girls for TORCH infection after marriage as a rotini test like thalassemia, hepatitis B, and HIV, to detect the disease before they become pregnant.

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