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THE PREVALENCE OF TORCH INFECTION IN MOSUL, A DESCRIPTIVE STUDY

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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:** To describe maternal death in Nehnawa governorate during 2018. **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 by ELISA test for 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 1 st pregnancy. It is less common among the antenatal cases who have better education and have spouses servicing in private or government sectors signifying the more health and sanitation awareness among this group.

KEYWORDS: TORCH, Congenital infection, Toxoplasma, Rubella, Cytomegalovirus infection, Herpes simplex.

INTRODUCTION

TORCH infection complex comprises of infections Caused by toxoplasma gundi, rubella virus, Cytomegalovirus (CMV) & herpes simplex virus.[1] 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.[2] Rubella may have a drastic outcome on the reproductive health and fetal outcome. At least 20% of the infants infected with Rubella in utero are born with multiple congenital Anomalies like sensory neural deafness, congenital heart Disease, microcephaly, mental retardation cataract and Blindness, etc.[1,2] And nearly 10% of the babies die by their First birthday. Cytomegalo virus (CMV), a virus belonging to the Herpes viridae family may be a major Cause of congenital anomalies in the new-born. Though Rare it may be responsible for severe fetal anomalies like Chorioretinitis, sensorineural deafness and cerebral Palsy. Genital herpes caused mainly by herpes simplex Virus type 2 and 1 during last trimester of pregnancy may Be responsible for disseminated neonatal herpes with a Case fatality of as high as 80%. It may Be a cause of various congenital anomalies in the fetus.[1,3,4] The diagnosis of these infections is mainly based upon the presence of serum antibodies, Particularly IgM in patient's serum.

Data from pregnant women attending Al-Salam hospital in Mosul city show Considerable variation depending upon the socioeconomic status, life style of the subjects. No baseline data of these infections in the local population of Mosul city after the war of 2016 against ISIS is available. Hence this research project is

conceived with An aim to assess the prevalence of these infections among Pregnant women in Mosul city.[2,45,6]

METHODS

A cross-sectional study was carried to assess the seroprevalence of TORCH infections among pregnant women when they visit Al-Salam hospital during the period From May 2019 to November 2019. A total number of 300 antenatal cases (ANC) were recruited into the Study during their visit to the hospital. They were selected randomly. Due care was taken to Maintain the confidentiality of the participants. Due Approval from Institutional Ethical Committee (IEC), was Obtained. Permission from the CDMO and 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 proforma / 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. ELISA kits were used For testing and sops prepared as per manufacturer's Instruction for ELISA tests was followed for testing and Interpretation. The bio wastes so Generated were disposed as per existing standard Guidelines. The results were recorded in laboratory Registers and analyzed. The laboratory test reports were dispatched to the patients.

RESULTS

Table-1 demonstrate the age group distribution of pregnant women and relation to their past obstetric history, where the pregnant women with age group from 18-30 years have the majority of the antenatal visit than other age groups about 189 pregnant women (63%) of the tatal sample, and 79 of them with BOH.

Bad obstetric history

Table 1: Age group distribution of pregnant women with their past obstetric history Category.

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

Table -2 demonstrate the sero-prevalence of different TORCH infections among the pregnant women, It was observed 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 CMV and Herpes infection at same time 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.

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

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

The overall prevalence of TORCH infection seem to be little less, though non-significant, in the ANCs who have higher educational status and whose spouses were working in different services than those engaged in business, agriculture.

Though we have not followed up the cases till their obstetric outcome, the bad obstetric history for previous pregnancies was enquired about. Here it should be noted that the BOH here included only fatal outcomes like abortion and stillbirth, low birth weight, mental retardation, sensorineural deafness, congenital anomalies, blindness.

146 of pregnant women having BOH. 25.3%(37cases) have reported positively IgM for Herpes. 20.5% (30cases) have reported positively IgM for a combination of herpes and CMV. 12.32% (18cases) have reported positively IgM for toxoplasma.

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-prevalence 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.[7,8] To determine the seroprevalence different methods are being used; again many commercial kits use different sources of antigens and the purification method also varies. So it is obvious that there is huge disparity of these data.

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.[9] Detection of specific IgM although 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.[1,5,6,7] A 4 to 8 folds rise in IgG titer in serum samples taken 2 weeks apart, though indicates a recent infection this is rarely ever practicable as by the time the patient presents in the clinic the antibody titer has already peaked. As the infection continues the IgG with low avidity matures to high avidity. The low avidity IgG usually persists for near about 100days.[1,2,3] In Iraq the sero-prevalence of Toxoplasmosis have been reported to be 5% to 20% in different regions using different types of tests. CMV infection is claimed to be the most common cause of congenital infection in pregnancy and carries a 30-40% risk of vertical transmission.[4] Data from various sources have shown that the seroprevalence of CMV is higher among reproductive age group women of middle or higher education. This is in agreement with our finding. Out of the total 300 study subjects we got 146 cases who have bad obstetric history.[8] The prevalence of IgM in these subjects is little lower than that observed in the 154 subjects without BOH.

The result of TORCH screening tests was not differed significantly between year 2013 and 2014, but there were significant differences between the frequency of the microorganisms included in TORCH screening, the highest was for Cytomegalovirus and Rubella with rates of 29.2, 39.1% and 30.3, 41.8% for each of the two viruses respectively.[10] Lower frequency was observed for Toxoplasma with rate of 9.5, 8.9% followed by Herpes simplex virus with a rate of only 1.1, 2.6%. High rate of mixed infection were between Cytomegalovirus and Rubella. The frequencies of chronic infections were significantly higher comparing with acute and sub-acute cases.

Cytomegalovirus, Rubella and Toxoplasma are prevalent among pregnant women in Kirkuk city 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.[10]

CONCLUSION

Our study shows most of the seroconversion occurs at young ages and particularly in the families who work in agriculture Farms. The actual affect these infections make on the Obstetrics outcomes are mostly in apparent initially or May be attributed to some other factors due to low Awareness of the people regarding these infections. Our Study is limited in that there is not enough time for follow Up of the 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. So other methods like molecular studies Including PCR are one option to differentiate active Infection. Regular health awareness programs and vaccination against Rubella will help in bringing down the prevalence rate of these infections.

There is considerable confusion as to routine screening of pregnant woman for TORCH infections. Different studies have different data regarding this. 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, if at all. Although most congenitally infected children are Asymptomatic at birth, many will develop some Symptoms later in life.[8, 9, 11, 12] 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 a more vigorous IEC drive, identifying the avoidable risk factors precisely and Serological screening-in-pregnancy of those exposed to Predictors of infection will provide an epidemiologically sound and financially sustainable measure to curb the TORCH burden.[13,14]

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