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ORIGINAL ARTICLE

Seroprevalance of Toxoplasma, Rubella, and Cytomegalovirus during Pregnancy

AMANULLAH BHUTTO[1], MARIA[2], NAHIL SHAMS[3], AQSA NOUREEN[4], HUMA ISHTIAQ[5], KIRAN MEMON[6]
[1]*Assistant Professor, Pathology Department, Ghulam Mohammad Mahar Medical College Sukkur*
[2]*Senior Registrar, M.S gynae/OBs, ANTH (IDH)*
[3]*Senior Registrar, Indus Medical College, Tando Mohd khan*
[4]*Assistant Professor in Pathology, Muhammad Medical College, Mirpurkhas*
[5]*Medical Officer*
[6]*Assistant Professor Indus Medical College, Tando Muhammad Khan*
Corresponding author: Amanullah Bhutto, Email: dramanullahbhutto@gmail.com, Cell: 03166261491

ABSTRACT

Purpose: Many infectious and congenital diseases caused by bacteria and viruses affect the health of both mother and fetus. Today, an epidemic with the common name TORCH affects women during pregnancy, especially during the first trimester.
Method: The current study investigates the pathogens and routes of transmission and the percentage of antibodies in the blood against toxoplasma, rubella and cytomegalovirus. The first 20 weeks usually develop in pregnant women and can be fatal if the infection is passed on to the fetus. Although these infectious diseases cannot be adequately treated, several vaccines are being introduced into the pharmaceutical industry to treat pregnant women during pregnancy and prevent fetal death.
Results: Data were collected from the Liaquat Jamshoro School of Medicine and Department of Public Health Pathology in affected women and summarized as follows. Transmission of cytomegalovirus and rubella is most common compared to toxoplasma. A CMIA test (chemiluminescent micro particle immunoassay) was performed to obtain highly accurate data on the responsible IgG and IgM antibodies in the blood of pregnant women. In this case, CMIA is considered very reliable.
Conclusion: Throughout the study, it was observed that these viruses can cause fetal malformations or ultimately death if left untreated in pregnant women. It is said to spread knowledge about the treatment and struggle of disease.
Keywords: CMV; CMIA; Rubella; TORCH; Toxoplasma;

INTRODUCTION

Women are tormented by numeral Diseases throughout being pregnant withinside the first 2nd and 1/3 trimesters. Among them, few are infectious in addition to congenital and together named TORCH. TORCH is shortened shape of Toxoplasmosis, different sellers (Treponema pallidum, Parvovirus B19), Rubella, Cytomegalovirus, and Herpes Simplex Virus. Epidemiology of Torch is time-honored in decrease and middle-earnings nations and is stated to be one of the predominant reasons of prenatal morbidity and mortality[1]. TORCH sellers motive infections which might be normally continual and asymptomatic. Multiple serological Laboratory checks are accomplished to diagnose TORCH sicknesses and it turned into discovered that CMIA (chemiluminescent micro-particle immunoassay) and ELISA (enzyme-connected immunosorbant assay) for IgM are discovered gifted and touchy correctly for this purpose[2]. In our have a look at statistics is gathered of various pregnant girls through CMIA testing.

Toxoplasmosis Gondii is a parasite from elegance protozoa and reasons the disorder of Toxoplasma. Cats are definitive hosts of this parasite at the same time as people are intermediate hosts. In the case of this disorder, first of all, contamination happens throughout being pregnant and maximum in all likelihood in the first trimester normally remained asymptomatic[3]. If number one toxoplasma appears in the first trimester then it's far determined that 1/third instances are long gone closer to congenital toxoplasmosis which may be transferred to the fetus. Diagnosis of toxoplasma is executed through blood take a look at ELISA or CMIA for T.Gondii unique antibodies IgM and IgG[4].

Rubella virus, from genus Rubivirus, a member of the Togaviridae own circle of relatives and RNA virus is a first-rate motive of rubella disorder in pregnant girls. Rubella contamination is executed with inside the first 20 weeks of being pregnant and is normally named German measles. The course of transmission of this disorder is a nasal course with to a few weeks of the incubation period. The virus enters thru the nasopharynx and is proclaimed with inside the circulatory system[5].

Rubella is a contagious disorder that results in contamination with inside the fetus and motive loss of life in addition to the congenital rubella syndrome (CRS). There isn't any unique remedy for this disorder however vaccination is delivered to treatment pregnant girls and to keep away from miscarriages[6].

Cytomegalovirus is associated with the own circle of relatives herpesviral and unfold thru frame fluids touch and this virus completes its lifecycle withinside the human body[7]. Cytomegalovirus (CMV) is every other main congenital disorder that impacts pregnant girls and the fee is fairly better in the ones girls who're having number one CMV disease. Vaccinations to test this sexually transmitted and congenital disorder were delivered through the countrywide academy of sciences United States and are given to pregnant girls' successfully[8]. In present process have a look at, Toxoplasma, Rubella, and Cytomegalovirus are being discussed. And their prognosis of antibodies IgG and IgM is executed through CMIA (chemiluminescent micro-particle immunoassay).

METHODOLOGY

This cross sectional and observational study was done by obtaining samples from Department of Pathology - Liaquat University of Medical & Health Sciences Jamshoro from January 2019 to August 2019. Sample of 129 females were selected and analyzed serogically by CMIA test. 5cc blood was obtained from effected pregnant females of age 21 to 30 years old. Sample was set on centrifugation machine and serum was separated out at 1500 g. IgG & IgM antibodies against the Toxoplasma, Rubella and cytomegalovirus were tested using chemiluminescent micro-particle immunoassay (CMIA) by Architect. CMIA is most advanced serological diagnostic technique, which is cost effective and reliable to detect CMV, Toxoplasma and Rubella virus.

All tests were conducted in duplicates. The data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS) Programmed version 20.0.

RESULTS

Table 1: Demographic Data (age group; 21-30 years=129 women)

Seropositivity		Toxoplasma	Rubella	Cytomegalovirus
IgG	N	18	118	129
	%	13.95%	91.47%	100%
IgM	N	0	8	-
	%	0%	6.2%	-
Both	N	1	2	None
	%	0.7%	1.5%	0%
Total		129	129	129

The majority of the sample (72%) were young women (ie, between 21 and 30 years of age). CMV (IgG) had the highest prevalence (100%), followed by rubella (97.67%) and toxoplasma (13.95%). IgG was greater than IgM. That is, 100% for CMV and toxoplasma and 93.6% for rubella, as shown and graphs in Tables 1.1 and 1.2.

Table 2: percentage ratio of IgG and IgM in toxoplasma, Rubella and CMV patients

Age	N	Toxoplasma				Rubella				Cytomegalovirus	
		IgG		IgM		IgG		IgM		IgG	
		N	%	N	%	N	%	N	%	N	%
≤20	17	1	5.55	0	0	13	11	1	12.5	17	13.18
21-25	47	3	16.66	0	0	43	36.44	1	12.5	47	36.43
26-30	46	10	55.56	0	0	45	38.14	4	50	46	35.66
≥31	19	4	22.23	0	0	17	14.42	2	25	19	14.73
Total		18		00		118		08		129	

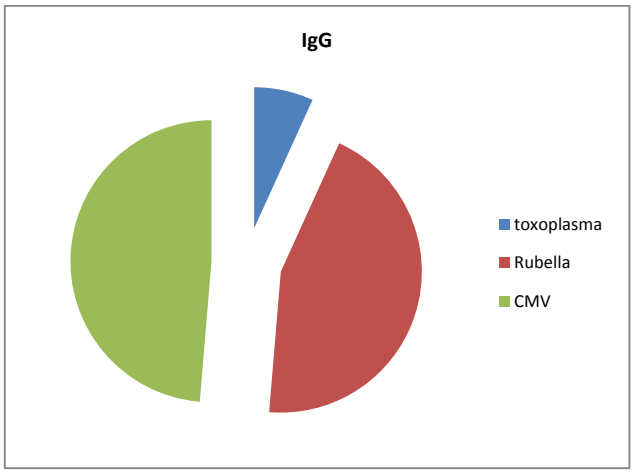

Figure 1: Demographic Data (age group; 21-30 years=129 women)

CONCLUSION

Cross-sectional and observational studies have shown that young girls between the ages of 21 and 30 are most likely to suffer from these contagious diseases. Data from the current study indicate that CMV and rubella have a high prevalence and can have serious consequences for maternal health and obstetric outcomes. Infectious diseases increase during pregnancy, resulting in birth defects and eventually fetal death. In the present study, we conclude that viral diseases invisibly invade pregnant women and ultimately lead to fetal death. Infectious diseases are one of the leading causes of silent abortions in the first trimester, not the last. To overcome this catastrophe for pregnant women, it is necessary to get vaccinated and introduce antiviral injections and formulations.

REFERENCES

1. Neu N, Duchon J, Zachariah P. TORCH Infections. Clinics in Perinatology. 2015;42(1):77-103.
2. Surpam RB, Kamlakar UP, Khadse RK, Qazi MS, Jalgaonkar SV. Serological study for TORCH infections in women with bad obstetric history. J Obstet Gynecol India. 2006;56(1):41-3.Al-Harthi, S. A., Jamjoom, M. B., & Ghazi, H. O. (2006). Seroprevalence of Toxoplasma Gondii Among Pregnant Women in Makkah, Saudi Arabia. Umm Al-Qura Univ. J. Sci. Med. Eng., 18(2), 217–227.
3. Zemene E, Yewhalaw D, Abera S, Belay T, Samuel A, Zeynudin A. Seroprevalence of Toxoplasma gondii and associated risk factors among pregnant women in Jimma town, Southwestern Ethiopia. BMC Infectious Diseases. 2012 Dec;12(1):1-6.
4. Kolawole OM, Anjorin EO, Adekanle DA, Kolawole CF, Durowade KA. Seroprevalence of rubella IgG antibody in pregnant women in Osogbo, Nigeria. International journal of preventive medicine. 2014 Mar;5(3):287.
5. Olajide OM, Aminu M, Randawa AJ, Adejo DS. Seroprevalence of rubella-specific IgM and IgG antibodies among pregnant women seen in a tertiary hospital in Nigeria. International journal of women's health. 2015;7:75.
6. Antona D, Lepoutre A, Fonteneau L, Baudon C, Halftermeyer-Zhou F, Le Strat Y, Lévy-Bruhl D. Seroprevalence of cytomegalovirus infection in France in 2010. Epidemiology & Infection. 2017 May;145(7):1471-8.
7. Staras SA, Dollard SC, Radford KW, Flanders WD, Pass RF, Cannon MJ. Seroprevalence of cytomegalovirus infection in the United States, 1988–1994. Clinical Infectious Diseases. 2006 Nov 1;43(9):1143-51.
8. Lopo S, Vinagre E, Palminha P, Paixão MT, Nogueira P, Freitas MG. Seroprevalence to cytomegalovirus in the Portuguese population, 2002-2003. Eurosurveillance. 2011 Jun 23;16(25):19896.