Occurrence Study of Rubella Virus in Miscarriages' Women in Al-Diwanyah Province

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الخلاصة

تهدف هذه الدراسة الى التعرف على مدى انتشار الإصابة الفايروسية لفيروس الحصبة الالمانية بين النساء الحوامل في مدينة الديوانيه . حيث تم استقصاء نسبة انتشار الاضداد المناعية المضادة لها وذوات الحمل الطبيعي(كمجموعة سيطرة) و شملت الدراسة 600عينة من النساء توزعوا على مجموعتين:

المجموعة الاولى شملت 500 نموذج مصلي ظهر منها 134(26, 8 %) من النساء المصابات المجهضات , و100 عينة من النساء ذوات الحمل الطبيعي (كمجموعة سيطرة) انتهى حملهن دون اصابة . الهدف من هذه الدراسة تحديد دور الفيروس في حالات الإجهاض لدى النساء المراجعات لمستشفى الولادة والأطفال والعيادات الخاصه في مدينة الديوانيه ، للفترة من تموز 2012 إلى اذار 2013 -جمعت المصول من النساء المجهضات والسيطرة لتخمين وجود الأجسام المضادة النوعية وفحص الامتزاز المناعى للفيروس. من مجموع 134 نموذج مصلي ظهر نموذج واحد (0.75) موجباً للأجسام المضادة ميو . و 113 (33, 84.%) للنوع كاما , أما نساء المجموعة الضابطة (السيطرة) فقد كانت النتائج سالبة . تم دراسة تأثير منطقة السكن والعمر على نسبة حدوث الإصابة 0 بيئت الدراسة ان اعلى نسبة اصابة كانت في الثلث الاول من الحمل ضمن الفئة العمرية 30-21 سنة 0تم تصنيف النساء المجهضات حسب عدد مرات و مراحل الحمل المختلفة0

Abstract

A total of 500 samples of patients which collected from miscarriages' women(aborted women) 134 were positive for rubella in percentage of (26.8%) and 100 of healthy as control group. Enzyme linked Immunosorbent Assay (ELISA) were used to assess the presence of specific antibodies against the virus. 1 (0.75) were positive for IgM antibody and 113 (84.33 %) for IgG. Whereas all control group 100 have been found to be negative. The occurrence of the pathogen in relation to the residence, age and occupation has been studied. This study was conducted to detect the possible association

between the infection and miscarriages at the Children Maternity Hospital and private laboratories in Al-Diwaniya Province during the period from July 2012 to March 2013.the highest ratio of infection in the first trimester at age group (21-30) years. Miscarriages' women were classified according to different trimesters and number of gravidity.

Introduction

Rubella virus is a human pathogen belonging to the Toga virus family of RNA viruses. Droplets and direct contact transmit it and the incubation period lies between 10 and 21days[1].During the first 8 to 11 weeks of pregnancy primary Rubella virus infections lead to severe fetal malformations in 65 to 90 %. Infections between the 12th and 16th week of pregnancy cause malformations in approx 10 %. [2]. There is only a minor risk of Rubella embryopathy after the 18th to 19th week of pregnancy. Rubella embryopathy is very rare in countries with established vaccination programs[3]. in less-developed countries, the rate of seronegative women with lacking immunization during their childbearing years is significantly higher and risk of malformations[4]. Newborn screenings for Rubella IgM antibodies can be a great help to identify infected newborns in these countries that do not offer prophylactic referral examinations on a regular basis and that have a high rate of seronegative women[5].

At the time of birth, IgM -antibody levels of newborns are only about 25 % of an adult's antibody level, therefore only Rubella virus IgG-tests with high enough sensitivity are suitable[6]. Low borderline values have to be realized without obtaining too many false positive results[7]

Aim of the study

The study aimed to find that the prevalence of rubella recorded in miscarriages' women and important recorded epidemiologically.

Materials & Methods

Patients and control group

In this study a total of 500 miscarriages' women , 134 of those were selected to study the role of Toga virus. Patients were from visitors and in hospital patients of Maternity and Children Hospital. The age of patients ranged between (15-35) years old. The mean age was 22 years old. A blood sample was taken from each patient. The study was conducted from July 2012 to march 2013. One hundred apparently healthy women were selected as a control group. They were pregnant women in different periods of pregnancy. They were almost similar with patients regarding age ranges, occupation, socio-economic status and their residence.

Collection of Blood Samples

Five ml blood samples were obtained by vein puncture from all studied women after cleaning the skin with 70% alcohol. Blood samples were stored in plastic tubes and left to clot undisturbed for about 1/2 hr at room temperature. Then they were centrifuged for 5 min at 3000 r.p.m[8]. and then the serum was transferred into other tubes. After the serum samples were collected, they were stored at –20°C until they were tested

Results and Discussion

A total of **500** miscarriages' women, 134 sera obtained from women who were admitted to a gynecological emergency in Maternity and Children Hospital of Al-Diwanyah Hospital and **100** sera from healthy women (control) were examined for anti-*Rubella*. In the present study, sera from (134) pregnant women 113 infected with IgG antibody and 21 with IgM antibody were taken. Out of them **66** at 1st trimester, **36** at second trimester and **32** at 3rd trimester were examined for rubella specific IgM and IgG antibodies by ELISA. An attempt was made to assess the seroprevalence rate of rubella specific antibodies in aborted women on the basis of serodiagnosis. The over all prevalence of seropositivity for IgG was [84.33%] , that means, they were immune for rubella infection and the rest [15.67%] seronegative cases were susceptible for rubella infection. In similar study in Pakistan; the over all seropositivity for rubella specific IgG was observed in (94%). From aborted women,

In 1998-2000, World Health Organization conducted a study to assess the rate of congenital rubella syndrome (CRS) per 1000 live births in developing countries. These ranged from (0.6-2.2) and were similar to those reported from industrialized countries during the pre vaccine area. The same study also assessed seroprevalence among the women of child bearing age of 45 developing countries and [10-25%] of the women tested were seronegative[12].These findings point out the alarming fact that due to the failure to adopt an immunization policy, the susceptibility and rates of CRS have remained unchanged in developing countries even 30 years after the discovery of the rubella vaccine .In the present study [70.90%] of pregnancies occurred in (21-30)year group, indicating [11.2%] a risk of rubella infection during their pregnancies. It is similar to the study of Ashrafunnesa *et, al*(2008). Author observed that the 70% of pregnancies occurred at (21-30) year group.

Seroprevalence of IgG antibody from 43% amongst primigravida to 59% and 78% in multiparous grand multiparous women respectively were observed [14.].

(Table 1) Distribution of positive sample according to age groups and different trimesters

Age Groups	Control groups (negative)	Positive of first trimester	Positive of second trimester	Positive of third trimester	Total sample
15-20	20	10	7	4	21(15.67)
>20-25	30	26	13	15	54(40.30
>25-30	35	21	10	10	41(30.60)
>30-35	15	09	06	03	18(13.43)
Total	100	66	36	32	134

Chi-square=2.74   **df= 3**   **P-value= 0.05**

(Table2) Relationship between age group and positive IgG with ratio

Age group	Negative	Positive	Tested sample for IgG %
15-20	20	25	17 (68.00)
>20-25	30	50	45 (90.00)
>25-30	35	44	38 (86.36)
>30-35	15	15	13 (88.66)
Total	100	134	113 (84.33)

Chi-square=1.43   df.= 3   P-value = 0.0

(Table 3) Relationship between specific IgM and IgG antibodies and different number of Miscarriages

Miscarriages number	Number of Women	Seropositive samples			
		IgM	%	IgG	%
One miscarriage	38	1	2.63	33	86.84
Two miscarriage	60	-	-	51	85.00
Three miscarriage	25	-	-	22	88.00
Four miscarriage	9			9	100
Total	134	1	0.75	113	84.33

(Table 4) Distribution of vaccinated , non vaccinated of infected women to Rubella (IgM and IgG)

Miscarriages number	Patients Number	Vaccinated Women	Non vaccinated women	Total Infected
One miscarriage	38	3 (7.89)	33 (86.84)	36 (94.73)
Two miscarriages	60	8 (13.33)	43 71.66)	51 (85.00)
Three miscarriages	25	1 (4.00)	19 (76.00)	20 (80.00)
Four miscarriages	9	0	7 (77.77)	7 (77,77)
Total	134	12 (8.95)	102 (76.11)	114 (85.07)

There is considerable variation in the prevalence of rubella antibodies

among women of childbearing age. European women have relatively higher prevalence of rubella immunity (93.2%) as compared to women of

African (86.7%) and Asian origin (78.4%). In India the reported figures vary from 53% to 94.1%. The reason for this difference in immunity is difficult to explain. However, factors such as net birth rate, population

density, opportunities for entry of virus, level of herd immunity at the time of virus introduction and ethnicity of the population may be responsible for this variation[14]. In the present study, the seropositivity for IgM antibody was (2.63). which was a single case found in 25 years old pregnant women in first trimester and was first gravid . In Pakistan 3% of the study population were found seropositive for rubella specific IgM antibody in a study[12]. In India it was seen in one report that the seropositivity of IgM antibody was (6.5%). Present study demonstrated that(84.33%) of the pregnant women between the ages of 15 to 35 years had rubella IgG. Seropositivity (88.67%) in the a verge age 30 years. This result correlates with one study carried out in Bangladesh where (80%) of the pregnant women between

average ages of   25 year's group that had rubella IgG antibody. Relationships between rubella specific IgM and IgG antibodies with gravidity, socioeconomic condition and with previous obstetric performance are respectively shown in seropositivity for IgM antibody was found only in one case, which belonged to middle socioeconomic group. Women who have been got vaccination   during there gravidness were(8.95) whereas who haven't vaccinated were (76.11) which means a little or might be nothing educational hygiene and poor statues. The risks from getting rubella during the different stages of pregnancy are outlined below.

- First trimester (weeks 0 to 13): If you contract rubella during the first trimester, there is a very high risk (up to 51%) that your baby will be affected. The earlier in your pregnancy that you catch rubella, the greater the risk to the baby. After week 10 the risk to the baby is reduced, however, they may develop problems with their sight or hearing, which may not become apparent until they are older.
- Second trimester (weeks 14 to 26): In weeks 14 and 15, there is still a risk to the baby(33 %). They may develop problems with their sight or hearing that may not become apparent until they are older.
- Third trimester (week 27 to birth): After week 16, the risk to the baby is low29 %.

Conclusion and Recommendation

The present study revealed that 134 cases (0.75 %) and (84.33 %) were positive for rubella specific IgM and IgG antibodies respectively. Relationship between miscarriages of pregnancy and rubella specific IgG and IgM antibodies is shown ,the substantial percentage of Miscarriages' women were susceptible for rubella infection. Providing a recommendation for bad hygiene pregnant or miscarriages women to early detection of maternal rubella infection, can easily prevent congenital rubella by screening. The findings of this study will help to formulate a guideline for taking national wide vaccination program**.**

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