

Prevalence of rubella among aborted and pregnant women in Wasit Province in relation to congenital anomalies in embryos and children

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انتشار مرض الحصبة الالمانية بين النساء المجهضات والحوامل في محافظة واسط وعلاقته بتشوهات الخلقية للاجنة والاطفال

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الخلاصة

تم إجراء الفحص المصلي لاجناد فايروس الحصبة الالمانية وفحص سونار لمعرفة التشوهات الخلقية للاجنة ٣٦٧ عينة دم لنساء مجهضات وحوامل و ٤١ عينة دم اطفال الدين راجعوا مستشفى الكرامة ومستشفى الزهراء في محافظة واسط من حزيران ولغاية ايلول ٢٠١١ وكانون الثاني ٢٠١٢ ، بلغت عددالعينات المصابة (الموجبة) ٢٢٠ (٥٣.٩%)، كانت نسبة انتشارالفايروس اكبر بين الاعمار (٢٣-٢٩) كما أشارت الدراسة الى وجود فروقات معنوية عالية بين الاعمار (٢٣-٢٩) والاعمار (٣٦-٤٠) ، اظهرت النتائج اعلى نسبة اصابة للنساء ذات اجهاض واحد بنسبة (٤٠.٩%) بفرق معنوي عالي مقارنة مع اقل نسبة و هي النساء ذات ستة اجهاضات وكما سجل شهركانون الثاني اعلى الاصابات وفروقات معنوية عالية مقارنة بشهرتموز، الحصبة الالمانية تزداد في الاجنة (٢٠-٣٢) اسبوع من الحمل و فروقات معنوية بين الاجنة (٢٠-٣٢) اسبوع من الحمل والاطفال التي تبلغ اعمارهم ٣-٤ سنوات.

Abstract

Serological examination to detect Rubella virus and ultrasound examination to known congenital anomalies in embryos among aborted and pregnant women blood sample of 367 and children blood sample of 41 was carried out in Al – Karama hospital and AL-Zahra hospital of Wasit province from June to September 2011 and January 2012. Overall prevalence of Rubella (positive cases) was 220 (53.9%). Prevalence of virus increased in age (23-29) and there were highly significant ($P < 0.001$) between age (23-29) and age (36-40). The highest infection in one aborted time (40.9%) and with highly significant ($P < 0.001$) compared with lowest in six aborted times .The highest infection rats was record in January and the highly significant ($P < 0.001$) compared with lowest infection record in July. Rubella infection increased in embryos (20-32) weeks of gestation and there were significant ($P < 0.005$) between embryos (20-32) weeks and children at aged 3-4 years.

Introduction

Rubella is known as German measles because the disease was first described by German physicians in the mid-eighteenth century [1,2]. Infection of the mother by Rubella virus during pregnancy can be serious; if the mother is infected within the first 20 weeks of pregnancy, the child may be born with congenital rubella syndrome (CRS), which entails a range of serious incurable illnesses. Spontaneous abortion occurs in up to 20% of cases [3]. The disease is caused by Rubella virus, a togavirus [4]. Rubella is transmitted via airborne droplet emission from the upper respiratory tract of active cases and can be passed along by the breath of people sick from Rubella. The virus may also be present in the urine, feces and on the skin. [5,6]. The virus is found in the blood 5 to 7 days after infection and spreads throughout the body. The virus has teratogenic properties and is capable of crossing the placenta and infecting the fetus where it stops cells from developing or destroys them [7]. There is considerable evidence that the virus spreads through the vascular system of the infected fetus and the observed cardiovascular, CNS, and hearing defects may be primarily due to focal cytopathic damage to the walls of blood vessels and lining of the heart; subsequent organ infection and/or ischemia may lead to further damage. Damage to blood vessels is probably extensive throughout the fetus and may be the cause of the generalized growth retardation. The effects in the eye appear to be due to a direct cytopathic effect; particularly on the lens [8,9]. The chance of embryonic infection is highest in the first trimester and decreases in the second semester only to increase again in the third trimester. This is presumably due to unspecified changes in the placenta. When the embryo is infected early in the first trimester it does not appear to have any conventional immunological response to prevent spread of the virus. This termination of susceptibility in the second trimester is consistent with development of the fetal immune response and increased transfer of maternal IgG [10]. German measles causes symptoms that are similar to the flu. The primary symptom of rubella virus infection is the appearance of a rash (exanthem) on the face which spreads to the trunk and limbs and usually fades after three days. Other symptoms include low grade fever, swollen glands, joint pains, headache and conjunctivitis. Rubella can cause congenital rubella syndrome in the newly born. The syndrome (CRS) follows intrauterine infection by the Rubella virus and comprises cardiac, cerebral, ophthalmic and auditory defects [11]. As the clinical diagnosis of rubella is unreliable, serological tests are needed for a diagnosis, especially when a patient is pregnant or has been in contact with a pregnant woman; diagnosis is usually made by detection of rubella specific IgM. Diagnoses of fetal infection here are small series reporting the usefulness of rubella-specific PCR on CVS for the prenatal diagnosis of intrauterine rubella infection. This technique has proved to be superior to assessment of amniotic fluid samples in one study. [12]. There is no specific treatment for Rubella. Treatment of newly born babies focused on management of the complications. Congenital heart defects and cataracts can be corrected by direct surgery. Management for ocular congenital rubella syndrome (CRS) is similar to that for age-related macular degeneration, including counseling, regular monitoring, and the provision of low vision devices, if required. Live, attenuated rubella vaccine is safe, effective and routinely administered along with the vaccines for mumps and measles to children and women of childbearing age [13].

This work aimed to detect rubella virus among aborted and pregnant women and related to congenital anomalies in embryos and children

Materials & methods

From June to September 2011 and January 2012, three hundred and sixty seven aborted and pregnant women and forty one children attending to the virology unit for Serological examination to detect rubella virus and ultrasound examination to known congenital anomalies of embryos in Al-Karama hospital and AL-Zahra hospital of Wasit province were investigated in this study .They women aged between 17 years to 40 years, children aged from birth to four years. The diagnosis of these patients was established on the basis of clinical examination .In most of these cases samples were found positive for Rubella Virus. For each sample should be examined by: ELISA Test for the Detection of IgM Antibodies to Rubella Virus in Human Serum .Human GMBH [14].

Results & Discussion

(Table no. 1):-

Prevalence of rubella virus in aborted, pregnant women and children

Total no.	+ve	%	-ve	%
408	220	53.9	188	46.1

The highest infection rate was 53.9% in positive cases compared with infection in negative cases were 46.1. (table-1)

(Table no. 2):-

The aborted and pregnant women group according to age.

Group	Age interval (years)	+ve	%	-ve	%	Total	%
1	17-22	58	53.7	50	46.2	108	29.4
2	23-29	84	81.5	19	18.4	103	28
3	30-35	34	44.1	43	55.8	77	20.9
4	36-40	21	26.5	58	73.4	79	21.5
	Total	197	53.6	170	46.3	367	99.8

Table (2) shows the distribution of rubella according to the age group .These results showed the highest infection rate was 81.5% in group 2(23 -29) years and lowest 26.5% in group 4(36-40). When compared between highest infection and lowest infection it was found highly significant ($P < 0.001$). Rubella can affect anyone of any age and is generally a mild disease, rare in infants or those over the age of 40 [15]. The older the person is, the more severe the symptoms are likely to be. Up to two-thirds of older girls or women experience joint pain or arthritic type symptoms with rubella [16,17] .

(Table no. 3):-

Aborted times per women engaged in our study

Aborted times	No. of women	%
1	150	40.9
2	100	27.2
3	50	13.6
4	37	10
5	20	5.4
6	10	2.7
Total	367	99.8

Table (3) indicates the distribution women according to the number of aborted times these result showed the highest infection in one aborted times (40.9%) and the lowest in six aborted times (2.7%). When compared between highest infection and lowest infection we found highly significant ($P < 0.001$) between it. The risk of major defects or organogenesis is highest for infection in the first trimester. Many mothers who contract rubella within the first critical trimester either have a miscarriage or a still born baby with congenital rubella syndrome. [18]. Alive,attenuated rubella vaccine is safe, effective and routinely administered along with the vaccines for mumps and measles to children and women of childbearing age.Vaccination of female was induced a marked reduction in the incidence of infection [19]. Pregnant women are usually tested for immunity to rubella early on. Women found to be susceptible are not vaccinated until after the baby is born because the vaccine contains live virus [20].

(Table no. 4):-

The aborted and pregnant women group according to months.

Month	+ve	%	-ve	%	Total	
					%	
June 2011	55	50	55	50	110	26.9
July 2011	41	45.1	49	54.7	90	22
August 2011	26	50	26	50	52	12.7
September 2011	45	50	45	50	90	22
January 2012	50	76.1	16	23.8	67	16.4
Total	217	53.2	191	46.8	408	100

Monthly distribution is represented in table (4). These results showed the highest infection in January 2012 (76.1%) and the lowest in July 2011 (44.2%). When compared between highest infection and lowest infection we found highly significant ($P < 0.001$) between it. Rubella is a disease that occurs worldwide, the virus tends to peak during the winter & spring in countries. [21, 22].

(Table no. 5):-

Times per children engaged and type of congenital anomalies in our study

Times	No. of children +ve		No. of children -ve				Type congenital abnormalities a of children
	No.	%	No.	%	No.	%	
Embryos (20-32 weeks)	9	75	3	25	12	29.2	Microcephally
1year	7	45.9	8	54.1	15	36.6	Microcephally Delayed mile stones
2 year	5	62.5	3	37.5	8	19.1	Delayed mile stones
3-4 year	2	33.4	4	66.6	6	15.1	Delayed mile stones ,Hearing loss, vision loss &dead
Total	23	56	18	44	41		

Table (5) Showed the distribution congenital CRS according to ages of children. These results showed the highest infection of congenital rubella in embryos at (20-32 weeks) of gestation (75) and the lowest in 3-4 years (33.4%). When compared between highest and lowest infection we found significant ($P < 0.005$) between it.

Many mothers who contract rubella within the first critical trimester either have a miscarriage or a still born baby. If the baby survives the infection, it can be born with severe heart disorders (Patent ductus arteriosus being the most common), blindness, deafness, or other life threatening organ disorders. [23].The infection rate to reach a high range in second and third trimester of gestation. Follow-up was to 2 years of age. [24].During those years, rubella caused about 28% deaths of unborn babies and 8% deaths of newborns Approximately, 44% babies were born with CRS. Of these babies, 10% were deaf, 6% were deaf-blind, and 4% were mentally retarded [25].

Conclusion

Rubella infection increased in embryos (20-32 weeks) of gestation and decreased in children aged between (3-4) years.

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