Original Reasearch Article

Preliminary Result on the Seroprevalence of Rubella among Pregnant Women in Third Health District of Lome City (TOGO)

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Abstract

In order to know the prevalence of rubella among pregnant women and, if possible, to introduce the rubella test in the antenatal check-up to improve the follow-up of pregnant women, we studied the seroprevalence of rubella among women pregnant who came to antenatal care in the third health district of the city of Lome. The objective of this study was to study the immune status of pregnant women against rubella and, more specifically, to assess their level of knowledge about this viral disease, which is considered infrequent in developing countries. We conducted a prospective cross-sectional study that allowed us to randomize 150 pregnant women. The data was analyzed with the Epi-Info version 6 software. With 150 women who participated in the survey, the results showed us a prevalence rate as follows: immunoglobulin G +, immunoglobulin M- (66.7%); Immunoglobulin G-, Immunoglobulin M- (25, 3%) with a suspicious population of 8%. In knowledge of the disease, only 26% of pregnant women had knowledge of the disease. None of the 150 women have been vaccinated against rubella. In view of the possible congenital consequences of rubella, the authors recommend systematic screening of pregnant women for prenatal consultation.
Keywords: Rubella, prenatal consultation, seroprevalence.

INTRODUCTION

Rubella is an eruptive disease [1], caused by the Rubella virus of the family Togavirus, contagious, it occurs most often in children between 5 to 9 years; it has almost the same signs as measles. Rubella gives good immunity and does not relapse.

The severity of the condition is due to the teratogenicity of the virus, if the infection occurs in pregnant women especially during the first trimester of pregnancy, it can be responsible for a poly malformative syndrome in the fetus see his death in utero [2]. The World Health Organization estimates that 100,000 children a year are born with congenital rubella syndrome [3]. In France, in 2012, 13 cases of maternal rubella were reported, but fetal transmission was diagnosed for 3 of these 13 maternal [4] infections. In Algeria sétif and Ain El Kebira, there is a seroprevalence of rubella at 68.6% [5] study done in 2015. TOGO, according to a survey conducted in January 2016, out of 98 cases of infectious diseases listed, 38 cases of positive rubella have been reported [6].

The diagnosis of a rubella infection is essentially based on serology. Clinical signs are inconsistently present and not very specific. Vaccination remains the only principal means of treatment, but in Togo the rubella serology is not systematic in the antenatal check-up and the vaccine is not accessible to all social groups because it is not taken into account by the Expanded Program on Immunization.

In order to contribute to improving the care of pregnant women and their children, the general objective assigned to our study is to assess the seroprevalence of rubella in pregnant women seen at prenatal consultation.

METHODS AND PATIENTS

Our work was studied by the prenatal consultation service of the Bè hospital, district hospital number three, which is one of the five districts of the Lomé-Commune region representing Togo's sixth health region. This was a prospective cross-sectional study that covered the period from April 1 to April 30, 2017, which is two months. The study included all

pregnant women admitted for prenatal consultation during the study period, who had honored the prenatal assessment, in particular that of rubella. A 3-5 ml sample of blood was taken at the elbow bend and collected in dry tubes using a Sterile syringe or the vaccine needle. After centrifugation (1500 - 2000 rpm) for 5 minutes, the serum is recovered for the purpose of the analysis. The quantitative study was carried out using an ELISA chain comprising a Thermo-shaker incubator. MB100-2A, a W-600 type washer and a Reader ER-500 microplate type reader.For the Assay Procedure The kit used is Rubella (RV), IgGAntibody, ELISA Kit and Rubella (RV) IgM Antibody ELISA kit. WKEA Med Supplies brand. The optical density at 450 nm is read with a microwave reader. Thus: If the optical density of the sample is less than 2, 1 the result is negative. If the optical density of the sample is greater than or equal to 2.1 the result is positive. The data processing was done with Epi-Info2000 software with statistical tests (K2 test); the significance level of p = <0.005 with a 95% confidence index.

RESULTS

Number of pregnant participants participating in the study

The number of pregnant women admitted to the antenatal clinic from the first to the thirty of April was 529.

Table-1: Table showing the total number of gestational attendants admitted to the antenatal clinic compared to the total number who participated in the survey

	Effective	%
Women who performed the serology of rubella	150	28.4
Woman who did not have the serology of rubella	379	71.6
Total	**529**	**100.0**

Distribution of pregnant women according to age

In total, out of 150 pregnant women who participated in the study, 9 (6%) are under the age of 20, 86 (57.3%) are between the ages of 20 to 29, 53 (35.3 %) are between 30 and 39 years old and 2 (1.3%) are over 40 years of age (Figure-1).
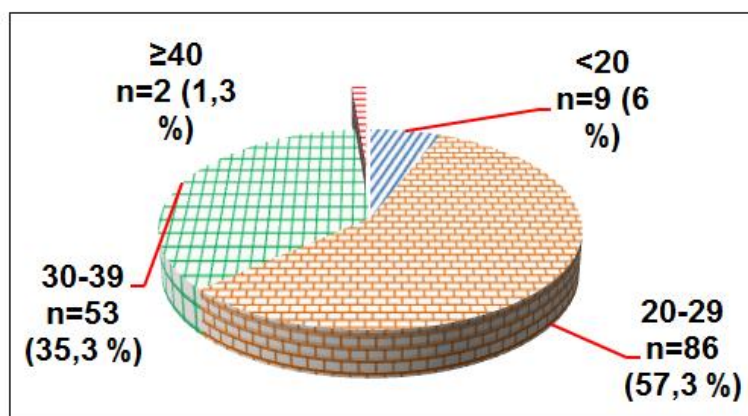

Fig-1: Distribution of pregnant women by age group (years)

Reparations of pregnant women according to parity

Most of the pregnant women who participated in the survey have a parity between I and IV as shown in Table-5.

Table-2: Distribution of pregnant women by gender

	Effective	%
0	45	30
I	52	34 .7
II-IV	52	34.7
≥V	1	0.6
TOTAL	**150**	**100.0**

Breakdown of patients by occupation

The predominant function of the pregnant women who participated in the survey are the retailers.
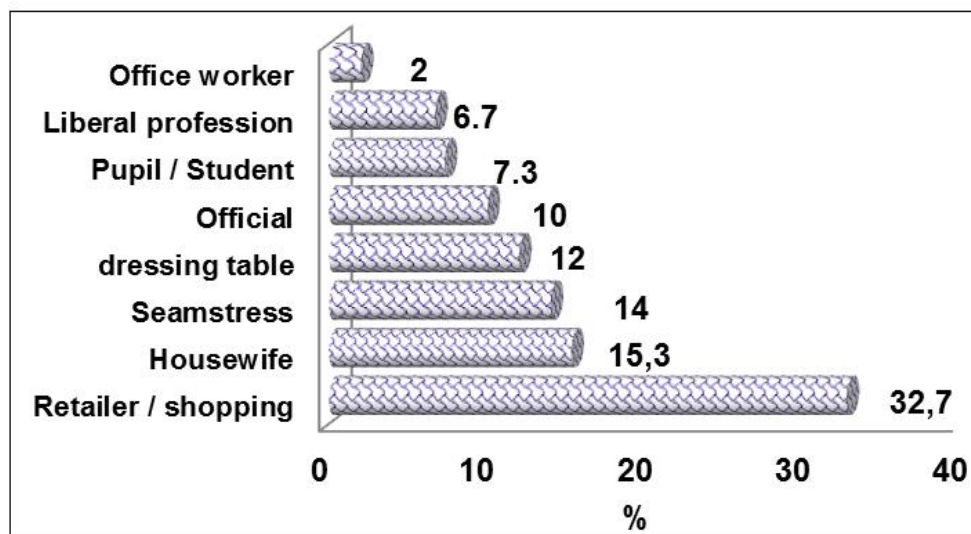
Fig-2: Distribution of patients by occupation

Distribution of pregnant women according to their level of education

Most pregnant women have a secondary education level of 48.7% according to Table-3.

Table-3: Distribution of pregnant women by level of education

	Numbers	%
Not in school	6	4
Primary	59	39.3
Secondary	73	48.7
Academic University	12	8
Total	**150**	**100**

Assessment of pregnancy according to their level of knowledge about rubella

In our study the majority of patients do not know rubella (83.3%) (Table-4).

Table-4: Distribution of pregnant women according to rubella knowledge

	Effective	%
Knows	20	16.7
Does not know	130	83.3
TOTAL	**150**	**100.0**

Distribution of pregnant women according to their level of education on rubella pathology

The study showed that, with regard to the level of education and knowledge about rubella, women with secondary education [64%] had notions about the definition of the disease (Table-5).

Regarding knowledge about rubella on pregnancy, women with secondary education had more notions about the disease.

Table-5: Distribution of pregnant women according to their level of education on rubella disease

	What is rubella			
	Knows		Does not know	
	Effective	%	Effective	%
Not in school	0	0	6	4.8
Primary	4	16	55	44
Secondary	16	64	57	45.6
University	5	20	7	5.6
TOTAL	25	100	125	100

Prevalence of immunized, non immunized and suspected population of rubella
Distribution of patients according to their seroprevalence

Immunized people represent the largest part of our study (66.7%) (Table-6).

Table-6: Distribution of patients by seroprevalence

	Effective	%
Immunized (*IgG+, IgM-*)	100	66.7
Non-immunized (*IgG-, IgM-*)	38	25.3
Suspicious population		
(*IgG+,IgM+*)	8	5.3
(*IgG- ,IgM+*)	4	2.7
TOTAL	**150**	**100.0**

IgG + = immunoglobulin G positive, IgM- = immunoglobulin G negative,
IgG- = immunoglobulin G negative, IgM + = immunoglobulin M positive

Seroprevalence of pregnant women according to age

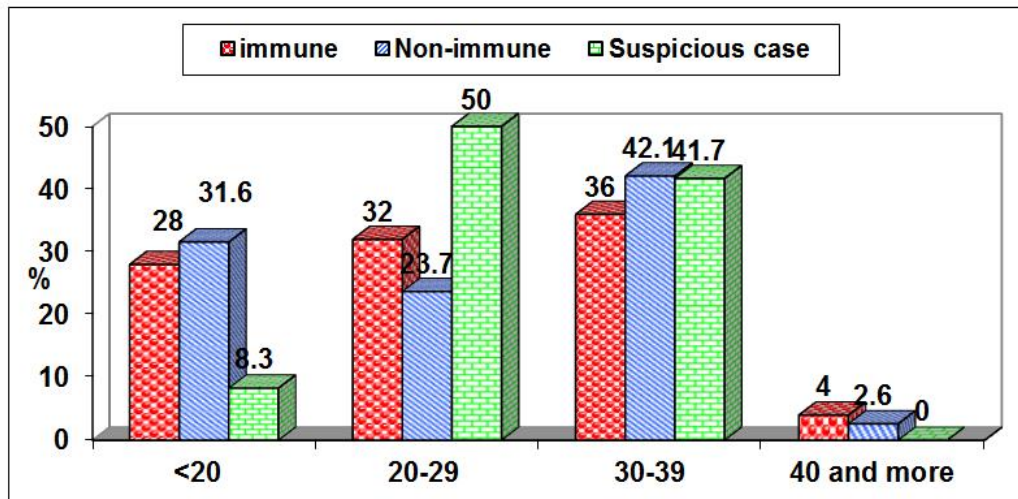The large proportion of young pregnant women are not immun

Fig-3: Distribution of pregnant women according to their immune status according to age

Seroprevalence of pregnant women according to their pregnancy

The largest proportion of immunized, non-immune, and suspicious pregnant women are between gesture 2 to 5.
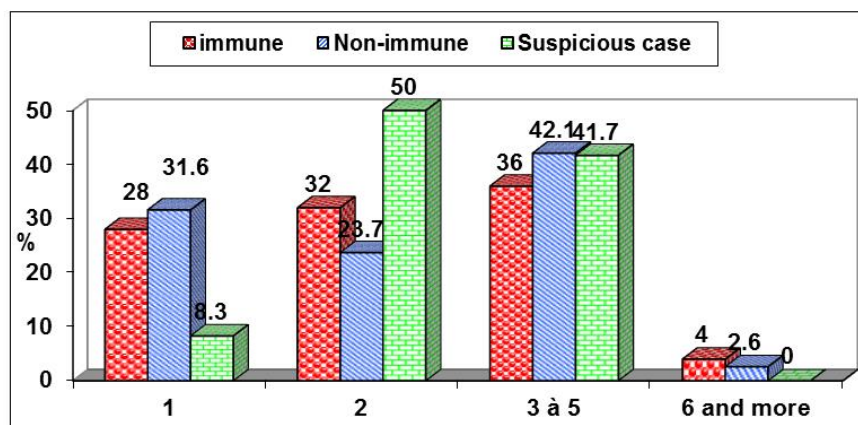

Fig-4: Distribution of pregnant women according to their immune status according to their pregnancy

Seroprevalence of pregnant women according to parity

Suspect cases are more represented in subjects with parity between one and four.
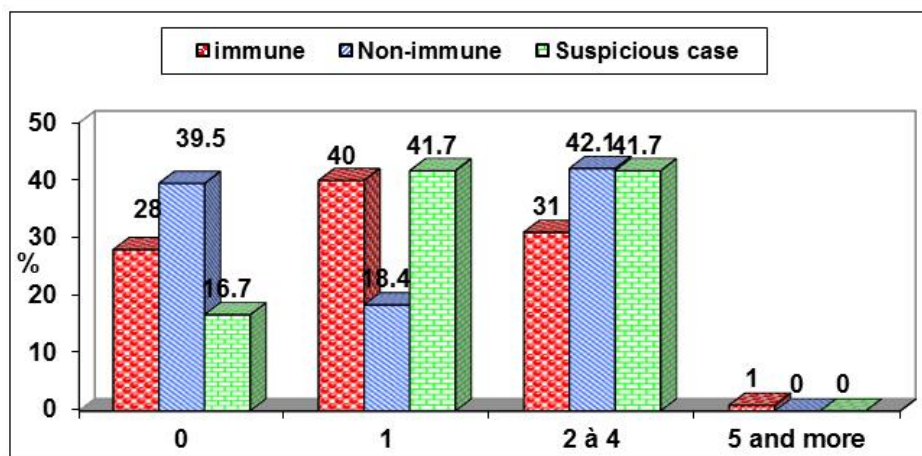

Fig-5: Distribution of pregnant women according to their immune status according to parity

DISCUSSION

The importance of rubella infection lies in its teratogenic effect on the pregnant woman. In this prospective cross-sectional study, we studied the immune status of pregnant women against rubella infection in the Bè hospital; this study showed that a high percentage of pregnant women; 66.7% have already been in contact with the virus. Because rubella vaccination is not routine in TOGO, this high percentage should reflect natural immunity. This indicates the still high endemicity of the infection in our country.

Comparing our study (66.7%), lower than that performed in the region of Constantine which resulted in 83.46% [7] of immunized women, is explained by the fact that the MMR vaccine is not taken into account by the Expanded Program on Immunization.

This similarity of the results was found in 2 other studies done in Morocco, the first carried out an assay of 967 women of childbearing age for the research of rubella-specific IgG in women aged 15 to 39 years [8] and which resulted in 83.35% of the women immunized, the second study performed a dosage of the same number of women at the childbearing age and which resulted in 83.50%.

Other studies in many countries have confirmed our results with seroprevalence from 80% to more than 96%, for example:
- A rate of 79.7% according to a study made in the region of Sousse - Tunisia- [9]
- 96.2% in Shiraz - Islamic Republic of Iran- [10]
- a rate of 90.1% in Senegal [11]
- 89.1% in Diyala, Iraq [12]
- a 95% rate in China [13]

The overall seronegativity rate in the women who were the subject of this study is 25.3%, so they are not immune to this rubella infection. Younger women are 55.3% more susceptible to infection than older women.

Comparing our seronegativity results (25.3%) with that of Shiras, Senegal, Iraq and China we note that this rate is higher.

In industrialized countries the overall seronegativity rate is 2-3% in Europe [14]. In France, this is explained by the availability, acceptability and introduction of the MMR vaccine into the Expanded Program on Immunization. According to data provided by the Rénarub laboratory network in 2011 and published in 2013 [15], this network has identified: 140 cases notified by laboratories for IgM + in 2011; the number of maternal rubella infections is 8 cases, 5 cases between them are certain and the other 3 are probable. The number of congenital infections is 2 cases.

Regarding the IgM assay in our studies; we note that 8% are seropositive, it includes 12 cases (8%), of which 4 (2.3%) have the serology of IgG negative, these cases can be explained that they are taken early before the appearance of IgG, so they will undergo seroconversion after 15 days, if seronegativity of IgG persist this can be explained by non-specific polyclonal stimulation. The rate found is higher than that found in Constantine and has 1% [15].

In this case it should be remembered that specific IgM can be detected, not only during a recent primary infection, but also during a reinfection (a very exceptional situation), or because of unspecific polyclonal stimulations of the system. immune, and also in a cross reaction with rheumatoid factors in case of systemic disease.

Because of these different situations in which IgM can be detected, the use of complementary tests such as the IgG avidity assay is essential to confirm or refute a recent diagnosis of infection. The use of this technique relies on the fact that mature avidity with time after the onset of infection. Thus, low avidity of rubella IgG evokes a recent infection, while high avidity excludes a recent primary infection.

In addition it is recommended for these cases a medical surveillance by echographies, biological assays ... against the risk of congenital rubella syndrome which can have very serious consequences for the fetus.

The present study indicates that 26% know rubella this lower rate is explained by insufficient counseling on some rare infection such as rubella.

In the end, our results highlight the need to know the immune status of women against rubella before she is pregnant at best in prenuptial.

CONCLUSION

Congenital rubella is a serious condition that should be eradicated because there is an effective live attenuated vaccine against the disease and developing countries should largely serology in their routine antenatal checkups.

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