



Congenital rubella syndrome and immunity status of immigrant women living in southern Italy: A cross-sectional, seroepidemiological investigation[☆]



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Received 5 July 2013; received in revised form 4 January 2014; accepted 7 January 2014
Available online 23 January 2014

KEYWORDS

Rubella;
Immigrants;
Antibody;
Prevention;
Questionnaire

Summary *Objectives:* A National Programme to eliminate Measles and Congenital Rubella was implemented in Italy in 2003. It aimed to achieve elimination by 2010 in line with the targets set by the World Health Organization (WHO) European Region.

The aim of this study was to determine the prevalence of rubella antibodies in samples of immigrant women living in southern Italy.

Method: A seroepidemiologic study was conducted from 1 January 2008 to June 30 2009. 489 immigrant women resident in Messina were enrolled in the study. The detection of rubella antibodies was performed using a microparticle enzyme immunoassay. A questionnaire was used to collect demographic data including age, country of origin, educational level and knowledge about rubella.

Results: The results of the seroepidemiological survey to detect rubella antibodies showed an overall seropositivity rate of 82.2%. Generally, knowledge about rubella and congenital rubella syndrome was lacking.

Conclusion: Many immigrants are susceptible to rubella and may benefit from vaccination programmes. Additional catch-up vaccination strategies are urgently needed to eliminate the risk of congenital rubella syndrome for future generations.

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Introduction

Rubella is a disease found worldwide which strikes mainly in winter or in spring in countries located in temperate regions. It is a viral infection which presents with mild symptoms, its course is normally benign and it has no long term effects on health. Cause for concern arises when the disease is contracted in the first trimester of pregnancy as 85% of newborns manifest Congenital Rubella Syndrome (CRS) [1].

According to WHO figures, the incidence of CRS is difficult to calculate for many parts of the world but estimates are in the range of 100,000 cases per year in developing countries [2].

In 2002, the WHO European region implemented a strategic plan based on a campaign for immunization aiming to eliminate measles and rubella and to reduce CRS to less than one case per 100,000 live births by 2010 [3]. In September 2010, the WHO Regional Committee for Europe decided to move forward this deadline to the year 2015 [4].

Several epidemics have been recorded in Europe over the last decade. Notably, in Romania with 115,000 cases of rubella, mostly in school age children, between 2002 and 2003 [5], and in Russia where CRS reached a rate of 350 cases per 100,000 newborns during an epidemic which occurred between 2002 and 2004 [6].

WHO figures for the period 2000–2007 reveal that the number of cases of rubella in Europe dropped considerably after 2003, and then numbers stabilised from 2005 on [7]. According to the European Centre for Disease Prevention and Control (ECDC), 1498 rubella cases were reported by 22 countries in 2005. The highest rates were reported by Lithuania (3.44 per 100,000) and the Netherlands (2.23 per 100,000). Overall incidence for the 22 countries was 0.51 per 100,000 [8].

Recently in Poland, there was a rubella epidemic and from January to April 2013 were reported 21,283 rubella cases.

One of the countries at greatest risk within this highly diversified European context is Italy, due to the inadequate and inconsistent vaccine coverage across the different regions of this country.

This is due to a lack of awareness of the problem with rubella infection in pregnancy probably. In 2003, Italy subscribed to the WHO European target to eliminate of congenital rubella by 2010 and approved a National Plan for the Elimination of Measles and CRS (PNEM) [9].

Moreover, a system of surveillance was introduced in 2005 making it compulsory to report cases of congenital rubella infection and rubella in pregnancy [10]. In the same year, two confirmed infections in pregnancy, both of which occurred in immigrant women, and one congenital infection, were detected [11]. In 2008, 65 cases of suspected rubella in pregnancy were reported under the above-mentioned system, 54 of these cases were confirmed in addition to 13 confirmed cases of either congenital rubella or infection alone. 16% of cases were foreign women [12]. The problem of higher susceptibility of minority groups, which includes the immigrant population has been well documented [13] and, therefore, deserves special attention.

The aim of this study was to determine the prevalence of rubella antibodies in a sample of immigrant women resident in the Italian province of Messina in order to identify groups at risk, i.e. with low antibody rates, and to urge a vaccination programme targeted to reach these groups.

The study also investigated how much subjects knew about rubella and its prevention.

Materials and methods

The study was conducted between 1 January 2008 to 30 June 2009 on a group of immigrant women aged between 18 and 45 years. The women had been referred to a clinic to perform routine checks at the University Hospital "G. Martino", Messina, Italy.

For 2 days per week during the study period, all immigrant women were invited to enroll in the study. A total of 500 women were approached and were informed of the aims of the study and asked to participate. Of the 500 women approached, 489 agreed to participate and 11 (2.2%) refused. The reasons for non-participation were not always given and some women had difficulty in understanding the Italian language. We had no information on the immigration status or origin of those who declined, because after explaining the objectives of the study women have not shown an interest in this investigation.

Women enrolled in the study represent approximately 21% of the total number of immigrant women of the same age living in Messina, Sicily.

A written informed consent, in Italian or English, each woman was asked to take a blood sample and collect personal data through a questionnaire. Participants were assured of the confidentiality of the information obtained. The study protocol was approved by the Scientific Ethics Committee of the University Hospital "G. Martino".

A questionnaire was completed by a healthcare worker. The questionnaire is structured in two parts: the first to gather demographic data including age, country of origin, socioeconomic status, educational level; the second includes a series of questions designed to obtain information about history of rubella disease, history immunization and knowledge about the risks of rubella in pregnancy.

489 serum specimens were collected, anonymized, and tested for rubella IgG and IgM antibodies. Commercial microparticle enzyme immunoassay kits [14] were used to detect and quantify human IgG and IgM antibodies for rubella virus in the serum. In accordance with the manufacturer's instructions, levels greater than or equal to 10 IU/mL were considered positive for IgG antibodies to rubella virus, whereas index values greater than or equal 0.800 were considered positive for IgM antibodies to rubella virus [15].

The female population recruited for this study was divided into six age groups as follows: <20, 21–25, 26–30, 31–35, 36–40, 41–45 years. The geometric mean titer (GMT) was calculated for each age group.

Replies to the questionnaire were processed using the software Epi Info 6.04d (Centers for Disease Control and Prevention, Atlanta, GA, USA).

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