



Investigating seropositivity of Rubella IgG among women of childbearing age in Konya province

Konya bölgesinde doğurganlık çağındaki kadınlarda Rubella IgG antikor seroprevalansının incelenmesi

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Abstract

Objective: Rubella virus causes intrauterin infections in pregnant women and it is teratogenic for fetus. Detecting sensitivity for Rubella virus by screening tests before or during pregnancy is important for preventing unwanted fetal and perinatal infections. In this study, women of childbearing age who admitted to Necmettin Erbakan University Meram Medical Faculty were analyzed retrospectively for rubella seropositivity according to the distribution of age groups.

Materials and Methods: Materials and methods: Rubella IgG antibody levels of 2151 women who were admitted to various clinics in our hospital between January 1, 2013 and December 31, 2015 were determined by ELFA method and investigated by separating into age groups.

Results: Of the women, 567 were (26.3%) found to be in 18-25 age group, 1143 (53.6%) were in 26-35 age group and 441 were (20.5%) in 36-45 age group. In women's age groups of 18-25, 26-35 and 36-45 years, the number of rubella IgG positivity and the rates were detected as 551 (97.1%), 1075 (94.0%) and 394 (89.4%) respectively. Of the total 2151 samples, 2020 (93.9%) were found to be positive for rubella IgG antibody. 1259 samples were sent from pregnancy clinics and 1169 (92.8%) of the samples were found to be positive for Rubella IgG.

Conclusion: In our study rubella seroprevalence among women of childbearing age in Konya is found to be high. Ensuring immunity to rubella virus by increasing the rate of seropositivity in women of childbearing age before pregnancy will be effective in preventing congenital rubella infection. It is pleasant that there is high immunity in our province but women who are seronegative should be detected and should be vaccinated before pregnancy for preventing congenital infection.

Keywords: Rubella; Seroprevalence; Fertility Population.

Öz

Amaç: Rubella virüsü gebe kadınlarda intrauterin enfeksiyonlara neden olup fetüste teratojenik etki yapan bir virüstür. Gebelik öncesinde veya gebelikte tarama sırasında Rubella virüsüne karşı duyarlılığın saptanması ile istenmeyen fetal veya perinatal enfeksiyon önenebilir. Bu çalışmada, Necmettin Erbakan Üniversitesi Meram Tıp Fakültesi'ne başvuran doğurganlık çağındaki kadınlarda rubella seropozitifliğinin yaş gruplarına göre dağılımı retrospektif olarak incelenmiştir.

Gereç ve Yöntem: 1 Ocak 2013-31 Aralık 2015 tarihleri arasında çeşitli kliniklere başvuran 2151 kadının rubella IgG antikor düzeyleri enzyne-linked fluorescent assay (ELFA) yöntemi ile yaş gruplarına ayrılıp incelenmiştir.

Bulgular: Araştırmaya dahil edilen kadınların 567'si (%26.3) 18-25 yaş, 1143'ü (%53.6) 26-35 yaş, 441'i (%20.5) 36-45 yaş grubunda yer aldı. 18-25, 26-35 ve 36-45 yaş grubundaki kadınlarda rubella IgG pozitiflik sayısı ve oranı sırasıyla 551 (%97.1), 1075 (%94.0) ve 394 (%89.4) olarak tespit edilmiştir. İncelenen toplam 2151 örneğin 2020'sinde (%93.9) rubella IgG antikor pozitifliği saptanmıştır. Gebe polikliniğinden gönderilen 1259 örneğin 1169'unda (%92.8) Rubella IgG pozitifliği görülmüştür.

Sonuç: Çalışmamızda Konya'da doğurganlık çağındaki kadınlarda rubella seroprevalansının yüksek olduğu tespit edilmiştir. Gebelik öncesi seropozitiflik oranının artırılarak doğurganlık çağındaki kadınlarda rubella virüsüne karşı bağışıklığın sağlanması, konjenital rubella enfeksiyonunu önlemede etkili olacaktır. Bölgemizde bağışıklık oranlarının yüksek çıkması sevindirici olup ciddi konjenital enfeksiyon riskine karşı gebelik öncesinde seronegatif kadınların tespit edilerek aşılması gereklidir.

Anahtar Kelimeler: Rubella; Seroprevalans; Doğurganlığa Sahip Popülasyon.

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INTRODUCTION

The Rubella virus leads to intrauterine infection in pregnant women and has a teratogenic effect on the fetus. The severity of the infection varies based on the gestational period and increases in the early period. It can lead to fetal death, spontaneous abortion, and premature birth. By affecting all organs and tissues, the virus leads to congenital infection with anomalies like eye, ear, cardiac, and neurologic defects, splenomegaly, and bone lesions (1). It is estimated that 100,000 cases of congenital rubella syndrome (CRS) are reported annually worldwide (2). Unwanted fetal or prenatal outcomes can be prevented with the detection of susceptibility to this infection before pregnancy or during screening in pregnancy. The rubella antibody is being searched within the scope of the TORCH test (toxoplasmosis, rubella, cytomegalovirus, and herpes simplex) but the effectiveness of routine screening of these tests is being debated based on differing viewpoints (3). It is important to know the regional seropositivity rates in terms of shedding light on these debates. Necmettin Erbakan University Meram Faculty of Medicine Hospital is a regional reference hospital that addresses a population of approximately 3 million and at which the flow of patients is provided from the numerous health institutions in neighboring provinces and districts. The purpose of this study is to retrospectively examine the distribution of rubella seropositivity in women of childbearing age based on age group who were referred to the hospital and to obtain updated regional data.

MATERIALS and METHODS

Serum sample results of women who admitted to various clinics in Necmettin Erbakan University Meram Medical Faculty between 1 January, 2013 -31 December 2015 were analyzed retrospectively for rubella IgG seropositivity. Serum samples were assayed by ELFA method (Vidas, Biomérieux, France). Antibody titers above 15 IU/ml were considered to be positive according to manufacturer's instructions. Results were investigated by separating into three age groups 18-25, 26-35 and 36-45.

RESULTS

Serum rubella IgG antibody levels of 2151 women were evaluated. It was indicated that distribution was exhibited as 1259 (58.5%) of the samples were sent from maternity outpatient clinics, 243 (11.2%) from gynecological and obstetrics clinics, 262 (12.1%) from family medicine, 149 (6.9%) from infectious disease clinics, and the remaining 200 from internal branches, and 38 from surgical branches.

Of the women, 567 were (26.3%) found to be in 18-25 age group, 1143 (53.6%) were in 26-35 and 441 were (20.5%) in 36-45 age group. In women's age groups of 18-25, 26-35 and 36-45 years, the number of rubella IgG positivity and the rates were detected as 551 (97.1%), 1075 (94.0%) and 394 (89.4%) respectively. Of the total 2151 samples, 2020 (93.9%) were found to be positive for rubella IgG antibody. 1169 samples of 1259 women

that were sent from maternity outpatient clinics (92.8%) were found to be positive for Rubella IgG (Table 1).

Table 1. Rubella IgG seropositivity according to age groups

Age groups	Number of sample	Rubella IgG seropositivity
18-25	567 (%26.3)	551 (%97.1)
26-35	1143 (%53.6)	1075 (%94.0)
36-45	441 (%20.5)	394 (%89.4)
TOPLAM	2151	2020 (%93.9)

DISCUSSION and CONCLUSION

Rubella virus causes diseases characterized by fever, sore throat, rapid fading rash, and lymphadenopathy, commonly seen in childhood. The virus spreads through the respiratory pathway and replicates in the nasopharynx and regional lymph nodes. Viremia occurs in 5-7 days after exposure with the spread of the virus throughout body. Transplacental infection of the fetus occurs during viremia. Acquisition of the rubella infection during pregnancy can lead to congenital rubella syndrome in the fetus (1,4). The group at risk for rubella comprises women of childbearing age and pregnant women. Studies conducted in our country and in other countries have examined the regional seropositivity rates in women of childbearing age and presented various data. Studies conducted in the United States found the rubella IgG seropositivity rate to be 97.2% in women population and reported 4 cases of congenital rubella syndrome between 2005 and 2011 (5). When studies conducted between 2002 and 2014 are examined in Africa, it was found that the seropositivity in the general population of various countries was 52.9-97.9% and the susceptibility in pregnant women was between 2.1-47.1%; it was seen that the acute rubella infection rate in pregnant women was 0.3% (6). The positivity rates in women was determined to be 88.2% in Egypt and 94.6% in Croatia (7,8). The IgG positivity was found to be 84% (2010-2013) in high-risk pregnant women in India (9). In studies conducted among women in childbearing age in our country, rubella seropositivity was reported by Kurugöl et al. in İzmir as 96,9% (2008), Şen et al. in Ankara as 83.5% (1995-1996), Şener et al. in Ankara as 89.5% (2003-2006), Demirdal et al. in Afyon as 78.5-80% (2000-2006), Bulut et al. in Malatya as 82% (1995-1999) (2,10-13). Rubella seroprevalance is mainly searched in pregnant women. Doğan et al. reported rubella IgG seropositivity as 95.7% (2008-2013) in İstanbul, İnci et al. in Artvin as 95.2% (2009-2012), Aşık et al. in Afyon as 92.5% (2010-2011), Uyar et al. in Samsun as 94.3% (2012-2013), Çeltek et al. in Tokat as 99.4% (2009-2012), Duran et al. in Sivas as 88.3% (2001), Parlak et al. in Van as 86.5% (2012-2013), Karabulut et al. in Denizli as 95.1% (2008-2009) (3,14-20). In studies evaluating according to age groups, Toklu reported rubella IgG seropositivity as 94.4-87.4% in Uşak (2010-2011) and Bakacak et al. as 89.4-95.5% in Kahramanmaraş (2012-2013) (21,22). The measles-mumps-rubella (MMR) triple vaccine that the World Health Organization recommends be administered at the end of the twelfth month and in the

first year of primary school has been implemented in our country since 1989 and was taken into the routine vaccine program in 2006. The rate of CRS varies between 0.6-2.2 per 1000 live births during outbreaks in countries where there is no immunization program against rubella. The incidence speed goal for measles/rubella was identified as less than 1 in 1,000,000 per year based on WHO basic indicators for measles and rubella elimination and CRS control. The incidence speed goal of congenital rubella syndrome was specified as less than 1 in 100,000 live births per year. Routine vaccination programs with effective quality was emphasized, and the target has been set to reach at least 95% coverage in the first and second doses of measles/ rubella vaccinations. The goal in the vaccination program regarding rubella is to capture a positive immunity level of at least 90% in pre-pregnancy and to bring congenital rubella syndrome under control (2,10,23). Our study revealed a rubella IgG antibody positivity of 93.9% in women of childbearing age. This rate was found to be 92.8% in pregnant women. It is determined that rubella seropositivity is high in women of childbearing age in Konya, similarly to other studies. The identification of individuals who have not been infected with rubella or not been vaccinated before pregnancy, and increasing seropositivity rates for the rubella virus in women of childbearing age with vaccination programs will be influential in the prevention of congenital rubella infection. It is pleasant that there is high immunity in our province but women who are seronegative should be detected and should be vaccinated before pregnancy for risk of severe congenital infection.

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