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A Seroepidemiologic Study on Rubella Antibody in Pregnant Women in Kyonggi Do

Moran Ki¹⁾, Boyoul Choi¹⁾, Young-Jeon Shin¹⁾, Hung Bae Park¹⁾, Bae Joong Youn²⁾,
Joong Surk Hahn²⁾

¹⁾Department of Preventive Medicine, Hanyang university College of Medicine

²⁾Department of Health and Welfare, Kyonggi do

Abstract

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Moran Ki¹⁾, Boyoul Choi¹⁾, Young-Jeon Shin¹⁾, Hung Bae Park¹⁾, Bae Joong Youn²⁾, Joong Surk Hahn²⁾

¹⁾Department of Preventive Medicine, Hanyang university College of Medicine

²⁾Department of Health and Welfare, Kyonggi do

The vaccinations of susceptible children and postpubertal females are the major means to prevent congenital rubella syndrome (CRS). Another means for reducing the CRS is therapeutic abortion or fetal monitoring for women who are infected in the first four months of pregnancy. We couldnt estimate the incidence of CRS in Korea, because there was no surveillance system for rubella and CRS. Nationwide vaccination program for 15months infant had been started early 1980s. So, most women at childbearing age during study period were not received rubella vaccination. We set forth CRS management system for pregnant women in two rural county of Kyonggi province, Korea. In this system, the presence of rubella IgG and IgM antibodies for early pregnant women were examined with MEIA (Microparticle Enzyme Immunoassay) method by IMk automated analyzer Abbott[®]. The infected pregnant women followed up in order to confirm their childrens CRS. This study was carried out from Mar. 1993 to Jun. 1994, and pregnant women examined were 874 persons.

The results were summarized as follows.

The overall positive rate of rubella IgG antibody was 94.5%(826/874). The positive rate was significantly increase as the age increased, and reached 100% in pregnant women who were over 35 years old. This results suggest that a meaningful number of women are infected during childbearing years. The geometric mean titer of IgG of sero-positive subjects was significantly declined as the age increased. On the question about history of URI symptoms and rash in pregnancy, 20.7% of respondents checked on URI symptoms with rash, 13.5% only URI symptoms without rash, and 65.8% no symptoms. However

pregnancy and the rubella IgG and IgM antibody status. Rubella infection rate in pregnant women was 0.9%(95% CI 0.4-1.8%). Two of these 8 infected pregnancies were terminated by therapeutic abortion. One of them was not followed. Five babies had no gross anomalies at birth. In Dec.1996, three of five babies were normal appeared infants. Two of them were not followed. Throughout this study results, we confirmed the need of CRS management system for pregnant women, in Korea.

Key Words: Rubella, Congenital Rubella Syndrome(CRS), Sero-positivity, Pregnant women

: M.D, Ph.D
 : 133-791
 : 02) 290-0662
 Fax: 02) 295-1116
 e-mail: bychoi@hyunpl.hanyang.ac.kr

17.

, , 3 , 35%
 (Cooper 1985).
 , , ,
 1969 12~15 , 1970
 1965 , 1980 1964
 95% (Cochi et al 1989). , 1988 1988-1991
 6 , 15 가 93 , 94
 , , ,
 , 가 (CDC, 1994).
 가 , 가 ,
 (Peckham 1985). Miller (1994) 1991 1993
 가
 1980 15 (MMR)
 , 가
 가 , 0~28%

10
 15 MMR
 가 , 가
 가
 가
 2

1.

()
 IgM 6 IgG
 916 15
 가 3 , 2 11 가 1 ,
 874 2 27 901 1
 1993 3 1994 6 , 1993 9 1994 6 (Table 1).

2.

(IgG IgM)
) , 16 (IgM
 16 , 16
 IgG IgM 6
 ,
 IgG 가 가
 가
 (Figure 1).

3.

가

4.

Abbott IMx[®] MEIA (Microparticle Enzyme Immunoassay)

2cc -20

(2, 1) 10μl, IMx

antigen coated microparticle
4-methylumbelliferyl phosphate 가

IgG IU/ml(international units of
antibody per milliliter), IgM IgM
index

IgG 10 IU, IgM 0.900, IgM 가가
0.800 0.899 (Schaefer LE 1989)

Abbott IMx[®], IgG
99.9%, 98.9%, 99.8%, IgM 100.0%, 99.0%, 99.3%
(Schaefer LE 1989).

5.

가 chi square test
Ratio test 가 chi square test가 Loglikelihood
가 t-test ANOVA Foxpro[®]
SPSS[®] 7.5

1.

1 589 (67.4%), 285 (32.6%)
874 2 21 1 3.9%, 가
6 1 2.5% (Table 1). 가
840 70.1%, 가 1,441
19.8% (, 1994).
26.6 (SD 3.7) 856 20 가 683
79.8% 568 (67.7%) 가
가 396 (84.4%)
가 15.6% 156

54% , 41.6% , 9.2% , 41.9%가 가 (Table 2).
 2-3 가 384 49.9% , 4
 14.7% . 10.9% 가
 335 43.7% 1 48.3% . 16.3%가 1 , 4.4%가 2
 1 163 (23.3%), 2
 98 (14.0%) . 가 17 (2.3%)
 6
 (738) 0.8% (Table 3).
 1 9-12 가 259 (31.6) 가 , 5-8
 가 235 (28.7%), 13-16 가 142 (17.3%) 6
 , 가 6 26
 (Table 4).

2.

(1)

가 IgG 874 826 94.5%
 . IgM 7 (0.8%) , 2
 IgG 가가 4 가 1
 874 8 0.9% (95% : 0.4% - 1.8%)
 . IgG , IgM 6 (1.0%), 1 (0.4%)
 (p=0.52).
 IgG 10- 19 95.8% (23/ 24), 20- 24 91.7% (255/ 278),
 25- 29 95.1% (385/ 405), 30- 34 97.7% (128/ 131), 35 100% (18/ 18)
 가
 (p=0.05), 가
 (p=0.002, Figure 2).
 (log normal distribution) . IgG 가
 가 (p=0.000, Figure 3). ,
 (p>0.05, Table 5).

(IgG) 가 (p=0.63). IgM 7 5-8
 3 , 9- 12 1 1 21- 24 , 2 25
 (Table 6).

(2)

0.9% (6/ 813) ,
 3.0% (24/ 802) .
 6 IgG ,
 94.9% IgG
 (p=0.43). IgG 가 (p=0.01). IgM

778 94.9% IgG가 (p=0.62). 가 (p=0.82), 가
 , IgM 가 IgM 가
 (p=0.44)
 96.8% (149/ 154) IgG
 93% (93/ 100) 94.3% (461/489)
 (p=0.37). IgM 3 ,
 2 (p=0.22,
 Table 7).

(3) 1 2
 1 IgM IgG 가 16 34 2
 . , IgG 가가 4 27 79.4% . IgM
 , IgG 가가 4 가 1

3.

IgM 7 . 6 , 1
 . IgM
 , 7 1 . 1 IgG 6
 IgG가 4 가 1 (Table 8).
 8 2 , 6
 6 1 가 5 6
 . 96 12
 . 5 2 , 3

. Lundstrom (1962)
 1
 33%, 2 25%, 3 9%, 4 4% , Miller (1982)
 1 80%가 , 13- 14 54%, 2 25% 가

9 (Table 9).
 IgG 94.5% (1980)

IgG IgM
 1973- 1979 2.4% - 2.5% IgM
 , 1980 가 0.01% - 0.19%
 가 (Swartz et al 1985). IgM 874 8
 0.9% 가 95% 0.4% - 1.8%

15 1980 가

2-3 95%
 (Chu et al 1988),
 94.7% (162/ 171)(1993), 99.5% (456/ 458)
 (1995). 10
 (Balfour et al 1980, O'sha et al 1982, Chu et al 1988), 10
 10% 가 (Lawless et al 1980, Coulombe et al
 1981, Robinson et al 1982). 12
 16 22% 가 , 8%
 가 (Christenson B & Bottiger
 M 1994). 3% - 10% RA27/3
 14% - 18%
 (Paludetto et al 1994, Behrman et al 1995) 가
 1980
 가 가 20- 24
 91.7% 35 100%
 가
 (Souza et al 1994). 0.9%
 10.9%
 가 가
 가

0.9%
 2/3 (Horstmann et al 1991)
 가

IgM 6 1 . IgM
 8- 12 (Hermann KL 1985) 5 2
 , 3 1980, 1984, 1986
 , 2 , 가 8-9 ,

154 22%
 IgM 3 (1.9%) (0.4%)

24-33 가 3 IgM

50%-70%가 Cooper(1985), Sever (1985)

20% 3 2 8-9 가

IgM Abbott Rubazyme kit
 가 가 Abbott IMx 가
 Enders (1985) Enzygnost(Behring) Rubazyme kit
 IMx Enzygnost 가

가

IgG IgM MEIA(Microparticle Enzyme Immunoassay)
 1993 3 1994 6
 874

1. 874 IgG 가 826 94.5% (95%
 :92.8-95.9%)

2. 1 IgM 7 1
 6 27 IgG가 1 8

3. 0.9% (95% : 0.4-1.8%) 가 35 100%

4. 6 (0.9%) IgG

5. 3% (24) 23 (95.8%) 22% (0.4%)
 IgM 3 (1.9%)

6. 8 2 , 1 , 5
 3 96 12

가 가

, IgM IgG 가가 4 가
0.9%

1. 94 . 1994
2. , , , Patwory KM.
, 1972 ; 4(1) : 59-63
3. , 가
(1). 1989 : 32(5) : 620-629.
4. ,
1980 ; 17 : 281-286.
5. , TORC H
1985 ; 22(3) : 233-241
6. ,
1984 ; 4(2) : 205-209
7. ,
1989 ; 11(1) ; 107-114
8. ,
1993;15(2):173-184
9. ,
1995;17(2):156-166
10. ,
1995;15(2):497-507
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