

Rubella in Catalonia: current status and perspectives*

May 2005

Rubella is a mild, communicable virus disease, usually caught by children. It can cause arthralgia, and severe complications, though uncommon, can include thrombopenia, myocarditis, pericarditis or encephalitis in adults. When infection is shown during the first three months of pregnancy, effects can be particularly dangerous for the fetus, since approximately 80%-85% of the cases can show congenital rubella syndrome^{1, 2}. Therefore, any strategy's main objective is to eliminate post-natal rubella, as interrupting the virus transmission means preventing the congenital rubella syndrome.

Rubella's epidemiology in Catalonia showed important changes since the introduction in 1988 of the second dose of the triple viral vaccine in children's vaccination programme at 11. In 1999 this second dose was lowered to 4. Therefore in Catalonia two doses are administered to children containing the rubella component. The drastic reduction of rubella's cases in Catalonia⁴, and the high coverage of vaccination among children lower the risk of infection in seronegative women, but do not fully remove it⁵. Moreover, the reduction of rubella virus circulation consequently made infection's incidence shift towards adolescents and young adults and therefore it is more likely to affect women of childbearing age. It is of the utmost importance monitoring immunological status against rubella's virus in women of childbearing age to eliminate congenital rubella, namely women who come from countries where either the vaccine against rubella is not sold or has lower coverage.

The aim of this report is to present the most relevant features of postnatal and congenital rubella cases occurred in Catalonia during the period from May 2002 and May 2005, and the prevalence of anti-rubella's antibodies in a representative sample of pregnant women in Catalonia.

The elimination of postnatal rubella's and congenital rubella syndrome (CRS) Programme was introduced in May 2002. There have been four information sources to perform monitoring:

1. Reports of postnatal rubella and CRS suspected cases.
2. The screening of other viruses included in the Vaccination Programme against Measles in Catalonia⁶.
3. The Microbiological Report System of Catalonia (NRSC).
4. The study of seroprevalence in a representative sample of pregnant women in Catalonia performed in 2003.

Methodology used in the three first sources has been widely described^(3, 4, 6). For the seroprevalence study, a sample has been selected through random cluster sampling (hospitals having maternity departments) stratified by provinces, including women who gave birth during July and August in 27 selected hospitals.

Serologic analysis to determine the presence of IgG antibodies to rubella virus was carried out through ELISA (Enzyme Linked Immunosorbent Assay) method.

Since May 2002, 45 suspected cases of postnatal rubella and 1 case of CRS have been reported by the said sources of information and distributed as follows:

1. 18 reports of clinical suspected cases of postnatal rubella and CRS.
2. 6 reports of clinical suspected cases of measles.

3. 18 reports performed in the NRSC and 3 cases associated to three confirmed cases reported by this organisation.

Out of the 45 postnatal rubella reports, 35 were analysed (35/45; 77%). In the analysed cases, the determination of antirubella IgM positive antibodies was epidemiologically related to 18 confirmed cases (18/35; 51%); 12 were false-positive cases (12/35; 37%), and 4 were qualified as suspected cases, as in 3 cases families could not be contacted and could not be investigated, and in the 1 case left the family refused to carry out confirmation analysis.

Out of the 18 laboratory-confirmed cases or epidemiologically linked to a confirmed case, 12 (12/18; 66.7%) have been isolated cases and 6 (6/18; 33.3%) have been associated to two familiar outbreaks.

Concerning the affected population, 18 sporadic cases (8/18; 44.4 %) belong to autochthonous population and 10 (10/18; 55.6%) to immigrants or visitors from different nationalities.

During the said period, only one CRS-imported case was reported: Spanish mother, 24, not vaccinated, spent first six months of pregnancy in Morocco and did not undertake any pregnancy monitoring. Birth was in a hospital in Madrid, in December 2003. Subsequently, baby was admitted to Barcelona's Sant Pau Hospital for growth retardation where, in February 2004, was diagnosed CRS by serologic confirmation.

Description of 2 outbreaks during this period is presented as follows:

1. Familiar outbreak imported occurred in March 2003 with two non-vaccinated children affected, 11 months and 2 years old. Incubation period of index case took place in Morocco.
2. Familiar outbreak occurred in May-June in 2004 with 4 affected (aged 12, 13 and 33).

In the distribution by age and sex groups cases are mainly occurring teenagers above 15, both men and women. If the same distribution is observed amongst autochthonous and immigrant populations, in those age groups where cases are predictable the population affected is to a major extent immigrant. It is predictable the case of a resident in Catalonia presenting some of the following features: a) 16 months or older; b) born in 1978 or later; c) showing no previous evidence of rubella immunity; d) showing no medical contraindications to vaccination; e) holding no religious/personal beliefs against vaccination.

Considering the main objective of vaccination programmes against rubella is to prevent CRS, that is, avoiding infections during pregnancy, it is important to increase antibodies prevalence in immigrant women of childbearing age.

Concerning the vaccination status of autochthonous population, we must point out that, except for the case of one person vaccinated with triple viral dose, the others had not been vaccinated, even though two women aged 21 and 25 would have probably been administered at least one dose of rubella vaccine. The vaccination status of immigrant population cases shows that the two cases aged 12 and 13 were vaccinated with triple viral dose in their origin countries, whereas the other 8 had not been vaccinated.

Seroprevalence study indicated ages comprised between 25 and 35 showed a significant difference in rubella antibodies presence between immigrant and non-immigrant women.

According to the country of origin, the lower prevalence of cases was found in 86.2% of the cases in American women against 94.6% in Spanish women. Susceptibility in immigrant women varies between 6.7% (Europe) and 13.8% (Latin America).

August 2005

*Report by the Epidemiological Surveillance Service of the Directorate-General for Public Health of the Department of Health

Bibliography

1. Chantler J, Wolinsky JS, Tingle A. Rubella virus. In: Knipe DM; Howley PM, editors. *Fields Virology*. 4th edition. Philadelphia: Lipincott Williams and Wilkins, 2001: 963-990.
2. Sheridan E, Aitken C, Jeffries D, Hird M, Thayalasekeran P. Congenital rubella syndrome: a risk in immigrant populations. *Lancet* 2002; 359: 674-675.
3. Departament de Sanitat i Seguretat Social. L'eliminació de la rubèola a Catalunya per a l'any 2005. Bases científiques i programa. *Quaderns de Salut Pública*, 18. Barcelona: Generalitat de Catalunya, 2002.
4. Generalitat de Catalunya. Departament de Sanitat i Seguretat Social. Programa d'eliminació de la rubèola postnatal i congènita a Catalunya per a l'any 2005. *BEC* 2002; XXIII (extraordinari 3r trimestre): 147-148.
5. Cooper LZ. The burden of Congenital Rubella Syndrome. A: de Quadros CA, editor. *Vaccines. Preventive disease and Protective Health*. Washington: Pan American Health Organization, 2004; p. 53-60.
6. Departament de Sanitat i Seguretat Social. L'eliminació del xarampió a Catalunya per a l'any 2000. Bases científiques i programa. *Quaderns de Salut Pública* núm. 12: Generalitat de Catalunya, 1999; p. 23-26.
7. Spika J S, Wassilak S, Pebody R, Lipskaya G, Deshevoi S, Guris D, Emiroglu N. Measles and rubella in the World Health Organization European Regim: diversity creates challenger. *J Infect Dis* 2003; 187 Suppl 1: 5.191-5.197.
8. World Health Organization. Progress Towards elimination of measles and prevention of congenital rubella infection in the WHO European Region, 1990-2004. *Wkly Epidemiol record* 2005; 8: 66-71.
9. De Serres G, Gay N.J, and Farrington C.P. Epidemiology of Transmissible Diseases after Elimination. *Am J Epidemiol* 2000; 151: 1.039-1.048.
10. Vaqué J. Inmunidad colectiva o de grupo. A: Salleras L, editor. *Vacunaciones Preventivas. Principios y aplicaciones*. 2nd ed. Barcelona: Masson S.A, 2003; p. 79-89.
11. Amela C, Pachón I, de Ory F. Evaluation of the measles, mumps and rubella immunisation programme in Spain by using a sero-epidemiological survey. *Eur J Epidemiol* 2003; 18: 71-79.
12. Lemos C, Ramírez R, Ordoñas M, Guilbert DH, Sanz JC, García L, Martínez Navarro F. New features of rubella in Spain: the evidence of an outbreak. *Eurosurveillance* 2004; 9: 19-20