

# Symptomatic rubella re-infection in early pregnancy and subsequent delivery of an infected but minimally involved infant

## A case report

B. D. SCHOUB, N. K. BLACKBURN, K. O'CONNELL, A. B. KAPLAN, J. ADNO

### Summary

A case of serologically proven symptomatic rubella re-infection in early pregnancy in a healthy multigravida who had been successfully vaccinated is reported to illustrate that the risk to the fetus is considerably less than with primary infection. The infant was infected, as evidenced by specific IgM in cord blood, but had no stigmata of congenital rubella at birth. Growth retardation was apparent at 6 months and hearing loss, not necessarily due to rubella, was detected at 8 months. Rubella re-infection, which may now be distinguished serologically by the urea degradation test from primary rubella, need not necessarily be an indication for termination of pregnancy.

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Re-infection with rubella after successful immunisation is rare and usually asymptomatic. A number of such asymptomatic re-infections have been reported in which pregnant mothers exhibited low levels of rubella IgM but infants were found to be IgM seronegative.<sup>1</sup> Although infection of infants has followed maternal rubella re-infection,<sup>2-4</sup> many such reports are questionable or have been retracted.<sup>5</sup> Sensitive mu-chain capture IgM enzyme-linked immunosorbent assay (ELISA) methods have created a diagnostic difficulty in distinguishing between primary rubella and re-infection, since positive IgM results are now frequently found in both. Recently a technique to distinguish primary from re-infection rubella has been described based on the relative resistance to IgG antibodies from past infections, compared with recent infections, to mild denaturing agents such as urea.<sup>6</sup> It has thus become most important to document the outcome in infants from cases of known rubella re-infection in pregnancy. A case of symptomatic rubella infection in early pregnancy after documented successful immunisation, and subsequent delivery of an infected growth-retarded infant, is reported here.

National Institute for Virology, Department of Virology,  
University of the Witwatersrand, Johannesburg

B. D. SCHOUB, M.D., M.R.C. PATH.

N. K. BLACKBURN, PH.D.

K. O'CONNELL, DIP.MED.TECH.

Departments of Paediatrics and Obstetrics and Gynaecology,  
University of the Witwatersrand, Johannesburg

A. B. KAPLAN, F.R.C.P.

J. ADNO, M.D., F.I.C.S.

### Case report

A 35-year-old woman had had three previous uneventful pregnancies. In 1979, between the first and second pregnancies, she was immunised with an unknown rubella vaccine and, according to the patient, a subsequent blood test confirmed that she was immune. A further rubella test in January 1987 showed her to be IgG positive, IgM negative. Her last menstrual period before her fourth pregnancy was on 20 August 1987.

Between 4 September and 9 September her husband and two of her children developed an illness diagnosed clinically as rubella and confirmed serologically in the husband. On 19 September the mother became ill, suffering diffuse muscle aches, conjunctivitis and arthralgia in the knees and hips. No rash or lymphadenopathy were observed. Serology performed on 22 September showed an IgG-positive, IgM-negative result, but on 5 October and 9 November the mother's serum became IgM-positive, IgG-positive. Serology was carried out using a mu-chain capture method giving optical density values of 1,316 and 0,568 (positive cut-off values were 0,726 and 0,515, respectively). Both IgM-positive values were confirmed using sucrose density gradient ultracentrifugation.

A female infant was delivered vaginally 4 days before term on 31 May 1988. The neonate was active and vigorous although dysmature and had an apgar score of 9. Birth weight was 2090 g, length 46 cm and head circumference 30 cm. Clinical examinations revealed an otherwise normal infant with no evidence of cardiac, neurological or ocular abnormalities and radiographic examination of long bones showed no abnormalities whatsoever. Rubella serological tests performed on cord blood and at 2 days of age using the same tests as above gave IgM OD values of 0,902 and 1,421 (positive cut-off values 0,380 and 0,197, respectively) and again, IgM results were confirmed by sucrose density gradient ultracentrifugation. The infant's progress was uneventful other than an episode of otitis media. Bilateral myringotomies and grommet insertions were performed at 18 weeks of age.

At 6 months of age the infant was thriving, albeit with continued evidence of growth retardation. Weight remained below the third percentile at 4640 g, length stayed on the third percentile at 61 cm and head circumference was well below the third percentile at 37 cm, with patent anterior fontanelle. No specific rubella stigmata were found.

Audiological examination carried out at 8 months of age found the child to be responsive to free-field stimuli at slightly elevated levels and in spite of some mild conductive loss due to the grommets, there was no evidence of rubella-induced hearing loss. The child remains under clinical follow-up and intellectual as well as growth parameters will be monitored. Retrospective examination of the mother's sera of 5 October and 9 November 1987 showed that the rubella ELISA IgG levels were 101,6% and 101,7% of the values before and after treatment with 8 M urea, respectively, confirming that she had a re-infection rubella during pregnancy.<sup>6</sup>

## Comment

Further cases of proven rubella re-infections in pregnancy with details of the outcome for the infant need to be collected in order to reassure patients that rubella re-infection either after natural infection or immunisation need not be an indication for termination of pregnancy.

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