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A case of congenital rubella syndrome and infection in South-East London in 2015:

prevention, diagnosis, and the public health response

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INTRODUCTION

Before the introduction of rubella immunisation in 1970, rubella was a common childhood infection.[1] Since then, the incidence has declined, with just 269 and 365 cases (confirmed by oral fluid IgM antibody tests) in England in 2013 and 2014 respectively.[2]

Although usually a mild disease, rubella infection in pregnancy can cause fetal death and congenital defects known as congenital rubella syndrome (CRS).[3,4] Congenital abnormalities may include deafness, cataracts, visual impairment, learning disabilities, and cardiac defects. Infection in the first trimester carries a high risk (up to 90%) of CRS in the infant.[1,4]

Cases of CRS have also fallen significantly: between 1971 and 1975 there were approximately 50 cases a year and 750 associated terminations.[1,5] Cases are now rare, with only eight cases reported between 2002 and 2011 in the UK.[6]

This paper describes a case of rubella infection and CRS, and the lessons learnt around early detection and management in both primary and secondary care.

THE CASE/TIMELINE OF EVENTS

In March 2015, the South-East London Health Protection Team was informed of a case of rubella infection and suspected CRS in a 17-day-old infant. The mother of the infant had been born in East Africa and had travelled to the UK at around week 12 of pregnancy. Later investigations revealed that the mother had a 2-day history of a rash-type illness shortly before arrival in the UK. She did not seek medical attention for her rash, or raise this at later appointments with healthcare professionals. The mother registered with a GP practice in week 17 of her pregnancy; at 18 weeks antenatal care commenced and booking bloods were taken that showed immunity to rubella with IgG of 162 IU/ml. At that time no testing for rubella IgM was performed. Retrospective re-testing of this sample after the birth of the baby showed that the sample was both rubella IgM positive and with low rubella IgG avidity, confirming a recent primary rubella infection.

The mother had been referred for specialist care due to intrauterine growth restriction, thought to be due to placental insufficiency. Following a scan at 34 weeks, the NHS trust decided to deliver the baby by caesarean section because of failure to thrive. After delivery the infant was admitted to the Neonatal Intensive Care Unit (NICU) because of prematurity. At birth the baby was noted to have bilateral cataracts and a cardiac murmur. An oral fluid swab and EDTA blood sample were sent to the national reference laboratory. Rubella RNA and IgM were detected in both samples, confirming the diagnosis of congenital rubella infection. The clinical symptoms also confirmed this as a case of CRS.

RESPONSE

An incident meeting was held on the same day. It included representation from the NHS trust (Infection Control, Microbiology, Neonatology, and Occupational Health) and Public Health England (National Infections Service and the local Health Protection Team). A risk assessment was performed and control measures were put in place.

RISK ASSESSMENT

The risk assessment considered patients, staff, and visitors in the delivery suite and NICU. During and following delivery all fetal bodily fluids and respiratory droplets were considered infectious. As a result, staff involved in the birth or care of the baby in NICU may have been exposed to rubella, although the risk of transmission was considered low because the trust has a policy of measles, mumps, and rubella (MMR) vaccination for all staff.

Other mothers and babies in the delivery suite did not have direct contact with birth products or the baby's bodily fluids. All of the infants in the same nursery were nursed in

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incubators at the time and therefore none of the other babies, mothers, or visitors would have been exposed to the baby's body fluids or respiratory droplets.

CONTROL MEASURES

Following diagnosis, standard infection control precautions including hand hygiene and use of personal protective equipment were assessed as sufficient for staff caring for the baby. The baby was isolated in a side room.

A weekly oral fluid sample was taken for rubella RNA, IgG, and IgM to monitor duration of virus excretion as a marker of infectiousness. Most infants with CRS excrete the virus at birth, with 50–60% having stopped within the first 3 months. However, 10% excrete the virus for more than a year.[7] The family were informed that the infectious period could extend beyond discharge, and were given infection control advice and training on weekly oral fluid samples. It was agreed that three consecutive negative samples were required to demonstrate that the infant was no longer infectious.

Ninety-six staff involved in the birth and care of the baby were informed, referred to Occupational Health (OH), and given information about what to do if they became unwell. OH required documentary evidence of immunity or two MMR immunisations. Until this was provided, staff were excluded from work in maternity and neonatal settings.

CONSIDERATIONS AND LESSONS LEARNT

This was the third case of CRS in the UK in 2014 and 2015. The mother of this case is thought to have acquired her infection overseas. The following recommendations have been identified from this case:

- clinicians are reminded to ask about a history of rash in pregnancy, referring to the viral rash in pregnancy guidance for appropriate testing and management.[8] The importance of taking a good travel history is also pertinent, to identify women at risk of exposure to other emerging infections, for example, Zika virus;
- clinicians should consider rubella as a possible cause of intrauterine growth restriction;
- clinicians are reminded to consider CRS in infants with consistent congenital abnormalities. A previous positive maternal IgG rubella screen should be interpreted with caution and in context. Early identification of rubella enables a timely risk assessment, infection control measures, and advice to staff and the family to prevent transmission; and
- a healthcare worker MMR vaccination policy protects staff and patients from infection, but needs to be implemented universally. Staff working in high-risk settings should be prioritised, and those employed by external organisations, such as agency staff and students, should also be included.

CONCLUSION

Following a review of evidence by the UK National Screening Committee in 2003 and again in 2012, it was decided that rubella susceptibility screening in pregnancy, in England, would cease on 1 April 2016.[9] Rubella susceptibility in pregnancy no longer meets screening programme criteria, mainly as a result of high vaccination coverage with the MMR vaccine in childhood. This has resulted in rubella infection rates in the UK being low and infection in pregnancy is therefore very rare.

This case report is a reminder that rubella infection remains prevalent in many countries, particularly across Africa and Asia, and uptake of vaccinations in these countries is often poor. Clinicians are reminded to explore any history of a rash-like illness or contact with a rash illness in pregnancy, particularly in women who were born overseas. New arrivals in the UK registering with a GP, particularly women of child-bearing age, should be offered MMR vaccine, prior to pregnancy, if their immunisation status is unclear.

There is growing consensus that maternal Zika virus infection may result in congenital Zika syndrome (microcephaly and other central nervous system abnormalities), although the risk of birth defects appears to be low compared with the risk associated with rubella.[10] The majority of people infected with Zika virus have no symptoms and so a detailed travel history is particularly important. Materials are available online to support clinicians in the risk assessment and management of pregnant women potentially exposed to the infection.

Patient consent

The patient consented to the publication of this article.

Provenance

Freely submitted; externally peer reviewed.