



Epidemiological Unit

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Rubella Fact Sheet

Rubella: the Disease

Rubella, normally a mild childhood disease, commonly known as German Measles, occurs worldwide. Infection of a mother in early pregnancy can cause fatal death or congenital rubella syndrome (CRS), with multiple birth defects such as cataract, hearing loss, heart problems and mental retardation. More than 110,000 cases of congenital rubella syndrome are estimated to occur each year in developing countries. Caring for children with the syndrome is difficult and costly because of the permanent disabilities caused by this condition.

Surveillance Case Definition of Rubella

Acute onset of generalized maculopapular rash
Temperature $>99^{\circ}\text{F}$ (37.2°C)
Arthralgia, arthritis, lymphadenopathy or conjunctivitis

Surveillance Case Definition of Congenital Rubella Syndrome

An illness presenting in infancy from in utero infection characterized by one or more of following:

Cataract/congenital glaucoma/pigmentary retinopathy
Congenital heart disease (Patent ductus arteriosus, peripheral pulmonary artery stenosis
Loss of hearing
Purpura, splenomegaly, jaundice
Meningoencephalitis, microcephaly, mental retardation
Radiolucent bone disease
OR
Rubella infection

Causative Organism

Rubella virus is a RNA virus in the Rubivirus genus in the Togaviridae family.

Mode of Transmission

Rubella virus is spread via respiratory transmission from human to human. Virus is shed in oropharyngeal secretions and is highly transmissible. The incubation period ranges from 12 to 23 days, with an average of 18 days. In pregnant women the virus infects the placenta and the developing fetus. Humans are the only known host.

Clinical Features

The primary symptom of Rubella virus infection is usually the appearance of fine, pink macules on the face. This rash typically spreads to the trunk and limbs and fades within 48 hours. However, in up to 1/2 of all cases, no rash may be apparent. Enlargement of postauricular, suboccipital, and posterior cervical lymph nodes is also common. In adult females, mild polyarthritides may occur. Rubella virus infection typically has no lasting effect. Rare complications of Rubella virus infection include thrombocytopenic purpura and postinfectious encephalopathy.

Pathogenesis

Rubella virus enters via inhalation and infects cells of the respiratory tract. It is then spread via the lymph nodes to the blood, where it induces an immune response which leads to lasting immunity.

Complications

Congenital rubella infection and congenital rubella syndrome are caused by rubella infection in early pregnancy. During the first 10 weeks of gestation, rubella infection may result in multiple fetal defects in up to 90 percent of cases, and often results in miscarriage or stillbirth. Infants with CRS who survive the neonatal period may face serious developmental disabilities and have an increased risk for developmental delay, including autism, type I diabetes mellitus and thyroiditis.

Laboratory Diagnosis

Serology is the mainstay of diagnosis of rubella infection. A recent rubella infection can be diagnosed by detection of rubella-specific IgM, rising titres of antibody in HAI and ELISA tests and seroconversion. Blood should be collected from pregnant women with features of rubella-like illness as soon as possible after onset of symptoms. A significant rise in HAI antibodies can often be demonstrated. However rubella-specific IgM is the test of choice for demonstrating current infection. It has been shown though that low and transient levels of IgM can be detected in cases of reinfection. Furthermore, low levels of rubella IgM may persist for a few months to 4 years following rubella vaccination.

The diagnosis of congenitally acquired rubella is made by the presence of rubella IgM in cord blood or serum samples taken in infancy, detection of rubella antibodies at a time when maternal antibodies should have disappeared (approx. 6 months of age) and isolation of rubella virus from infected infants in the first few months of life.

Treatment & Prevention

Management of Rubella virus infections is typically symptomatic. For prevention the live, attenuated Rubella virus vaccine is available and it produces lasting immunity in more than 90% of recipients. Rubella vaccination prevents the occurrence of congenital rubella syndrome.

In Sri Lanka the Expanded Programme of Immunization (EPI) offers rubella vaccine at the age of 3 years as the live attenuated Measles Rubella (MR) vaccine and as Rubella vaccine at the age of 13 years.

Surveillance of Rubella/CRS is carried out with special investigation forms following the routine notification procedure as for other vaccine preventable diseases. All suspected and confirmed cases notified are entered in the National Rubella/CRS Register.