OVER VIEW OF CONGENITAL RUBELLA SYNDROME

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Summary

Congenital rubella syndrome is a group of physical abnormalities that have developed in an infant as a result of maternal infection and subsequent fetal infection with rubella virus. Signs are multiple congenital anomalies that can result in fetal death. The main defects caused by rubella infection are sensorineural deafness which can progress after birth eye defects such as cataracts, cardiovascular defects, brain damage, that only occurs after infection between the third and sixteen week of gestation, causing mild to severe mental retardation with microcephaly and spastic diplegia: major structural malformations are rare. The prenatal diagnosis of fetal infection is done on rubella contact counting with or without eruptive disease, associated with identification of the virus by gene amplification on aminotic fluid or with a significant rate of IgM in fetal blood (fetal blood sampling can only be performed after 22 weeks of gestation.

Key words: CRS-Congenital- pregnancy-rubella sensorineural deafness, cataracts.

Disease name and Synonyms: Congenital rubella syndrome, fetal rubella syndrome

RUBELLA:

Rubella commonly known as German measles is a disease caused by the rubella virus. The name “rubella” is derived from the Latin meaning little red. The disease last one to three days. Children recover more quickly than adults. Rubella is an exanthematous illness characterized by nonspecific signs and symptoms, including transient erythematous and sometimes pruritic rash, postauricular or suboccipital lymphadenopathy, arthralgia and low grade fever[1-3]. Clinically similar exanthematous illnesses are caused by parvovirus, adenoviruses and enteroviruses[2]. The name rubella is sometimes confused with rubeola, an alternative name for measles in English- speaking countries[4].

WHAT IS RUBELLA VIRUS :

Rubella virus is the organism that causes rubella (also known as German measles or three day measles). It is an RNA (ribonucleic acid) virus form the family togaviridae and the genus rubivirus.

PATHOLOGY AND PATHOGENESIS:

Togavirus known to be transmitted via the respiratory route. Rubella virus can also act as a teratogen. The virus resides in the mucus in the nose and throat of the infected person. When that person sneezes or coughs, droplets spray into the air. The infected mucus can land into the other people’s noses or throats when they breathe or put their fingers in their mouth or nose after touching an infected surface. It is then spread via the lymph nodes to the blood, where it induces an immune response which leads to lasting immunity.

EPIDEMIOLOGY:

Rubella virus is spread via respiratory transmission from human to human. Virus is shed in oropharyngeal secretions and is highly transmissible. Spring out breaks typically occur every few years. 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 hrs. Enlargement of postauricular, suboccipatal and posterior cervical lymph nodes is also common. Sensorineural deafness-58% of patients, Eye abnormalities – especially cataract and microphthalmia (43%)(abnormally small eye), Congenital heart diseases- patent ductus arteriosus(50%).

OTHER MANIFESTATIONS OF CRS MAY INCLUDE:

Spleen, liver or bone marrow problems some of which may disappear shortly after birth. Mental retardation, (small head size) microcephaly, eye defects, low birth weight, thrombocytopenic purpura (Blue berry muffin rash) hepatomegaly and micrognathia. After birth the child may develop diabetes due to gradual destructions of the pancreas by rubella virus. Children who have exposed to rubella in the womb should also be watched closely as they age for any indication of the following developmental delay, schizophrenia, growth retardation, learning disabilities, diabetes, glaucoma[5].

CONGENITAL RUBELLA SYNDROME (CRS):

CRS is Caused by infection of the fetus in utero during the first trimester of pregnancy. If infection occurs 0-28 days before (conception there is a 43% chance the infant will be affected. If the infection occurs 0-12 weeks after conception there is a 51% chance the infant will be affected. If the infection occurs 13-26 weeks after conception there is a 23% chance the infant will be affected by the disease. Infants are not generally affected if rubella is contracted during the third trimester or 26-40 weeks after conception. Problems rarely occur when rubella is contracted by the mother after 20 weeks of gestation.

SEROLOGIC TESTING:

- Enzyme immune assays (EIA) - Measure IGM antibodies.

- Immunofluorescent antibody assays (IFA) – Assay for both IgG and IgM. Care must be taken with the IgM assay to avoid false positive results due to complexes with rheumatoid antibody.

VIRUS ISOLATION:

Rubella virus can be isolated from nasal, blood, throat, urine and cerebrospinal fluid specimens from rubella and CRS cases. Efforts should be made to obtain clinical specimens (particularly pharyngeal swabs and urine specimens) for viral isolation from infants at the time of initial investigation. Infant with CRS may shed virus for a prolonged period so specimens obtained later may also yield rubella virus.

LABORATORY CRITERIA FOR DIAGNOSIS:

- Isolation of rubella virus.

- Demonstration of rubella specific immunoglobulin M (IgM) antibody.

LABORATORY TESTING:

- Demonstration of rubella – specific IgM antibodies in the infants cord blood or sera. In infants with CRS, IgM antibody persists for at least 6-12 months[6].

- Documentation of persistence of serum rubella IgG titer beyond the time expected from passive transfer of maternal Iga antibody.

PREVENTION:

- By active immunisation programmes using live, disabled virs vaccines.

- Live attenuated virus vaccines RA 27/3 and cendehill strains were effective in the prevention of adult disease.

- Vaccine is now given as part of the MMR vaccine first dose is given at 12-18 months of age with a second dose at 36 months.

- Pregnant women found to be susceptible are not vaccinated until after the baby is born because the vaccine contains live virus[7].

TREATMENT:

No specific treatment for Rubella. Congenital heart defects and Cataracts can be corrected by direct surgery. Management for ocular CRS is similar to that for age related macular degenuation including counselling, regular monitoring and provision of low vision devices if required.

CONCLUSION

CRS is highly complicated and prevention is done by immunization and treatment is few such as surgery for cardio vascular disease and cataract. As it spread in spring season children has to take care to avoid this disease spread and compulsory a MMR vaccine should be done in the month of 12-18 with a booster dose at 3 yrs.

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