

6. Title: Studies on the Congenital Rubella Syndrome

Principal Investigators: Chaninthorn Suvongse, M.D.
Rampaya Ketusingh, M.D.
Anong Pariyananda, M.Sc.
Lloyd C. Olson, M.D.

Assistant Investigators: Theerachai Suthikam, B.Sc.
Supatra Chulachambok, R.N.

Period of Report: June 1968—March 1969

The occurrence of epidemic rubella in Bangkok during late 1967 and early 1968 (SMRL Annual Report, 1968) prompted subsequent surveillance for cases of congenital rubella at the Children's Hospital. The first such infant was admitted in June, 1968. Since that time clinical observation and virological data have been collected on 135 cases suspected of this diagnosis.

Specimens of nose, throat swabs, urine and CSF were collected from 136 infants; 28 were diagnosed later as non-rubella syndrome. 34 out of 108 patients were found to excrete virus (31.4%). the source of virus is shown in Table 1.

Table 1. Virus isolation from suspect infants.

| SPEC. | NO. POSITIVE | TOTAL NO. TESTED | % OF POSITIVE |
|-------------|--------------|------------------|---------------|
| Nasal swab | 24 | 98 | 24.5 |
| Throat swab | 20 | 98 | 20.3 |
| Urine | 7 | 74 | 9.5 |
| CSF | 3 | 11 | 27.3 |

Table 2. Maternal history in suspect cases of congenital rubella.

| Maternal History | Number of Infants | |
|---------------------------------|-----------------------|------------|
| | No. virus & Total No. | Percentage |
| Disease during pregnancy | 15/31 | 48.4 |
| Exposure during pregnancy | 1/8 | 12.5 |
| No history, disease or exposure | 15/59 | 25.4 |
| Unknown | 3/9 | 33.3 |

Virus isolation techniques. Ngsal swabs, throat—swabs, urine and occasionally CSF were obtained from cases clinically suspected of congenital rubella. Monolayer tube cultures of LLC—MK₂ cells were used for virus isolation. 0.1 ml aliquots of each specimen were inoculated into four tubes of cell cultures. Inoculated tubes were incubated at 37°C in stationary rack.

On days 10—12 post—inoculation if no cytopathic effects had been observed medium in 2 of test and control tubes were replaced with 1 ml of a suspension containing 10³—10⁴TCD of Poliovirus type 2 and observed for evidence of interference. Any interfering agents were assumed to be rubellavirus. If there was no interfering agent, a blind passage was made. When an interfering agent was not isolated in passaged cultures, the specimen was regarded as negative for rubella virus.

Clinical data. Most cases were chosen for study at birth because of suggestive clinical manifestations coupled with a maternal history of possible rubella infection, or exposure there to (Table 2).

Infants with the congenital rubella syndrome demonstrated all the features of the "expanded congenital rubella syndrome" observed elsewhere. Neonatal jaundice, hepatosplenomegaly, petechiae or purpura, and symptoms of congenital heart defects were prominent features. Also observed were generalized lymphadenopathy, periostitis, encephalitis and early formation of cataracts. 33 infants of the 108 studied died during the neonatal period. Autopsy tissues were obtained and assayed for virus, with results shown in Table 3.

Table 3. Isolation of virus from autopsy tissues.

| Organ | No. Tested | No. positive |
|-------------|------------|--------------|
| Heart | 32 | 6 |
| Lung | 33 | 5 |
| Liver | 33 | 2 |
| Spleen | 32 | 7 |
| Pancreas | 31 | 6 |
| Kidney | 6 | 0 |
| Bone marrow | 32 | 5 |
| Brain | 2 | 0 |
| Thymus | 2 | 0 |

SUMMARY

As predicted from the large number of adults experiencing rubella infection during the epidemic period, maternal infection was sufficiently common to result in a significant number of affected infants, While the extent of congenitally infected fetuses remains unknown, during the period of observation in this one hospital rubella appeared to be responsible for the majority of neonatal illnesses and fatalities. The spectrum and severity of symptoms suggested the virus was no less virulent than in the 1964 epidemic of the United States.