Rubella in Delhi: In-utero Infection and Congenital Rubella Syndrome

Dear Editor,

Importance of rubella infection, which otherwise is a mild infection, arises from its teratogenic effects in foetus in case of primary maternal rubella infection. This may lead to foetal death and cause spontaneous abortion or the foetus may survive and bear multiple congenital defects after birth called congenital rubella syndrome (CRS). CRS is an important cause of deafness, heart disease, cataract, mental retardation and variety of other permanent sequelae in children.[1,2] Rubella testing of blood samples referred from Delhi-based government hospitals is being carried out at NICD for the past 20 years. The samples are received for serosurveillance of women of child-bearing age for rubella antibodies, pregnant women for diagnosis of suspected in-utero rubella infection, retrospective diagnosis of role of rubella virus in women with recent abortion and retrospective serosurveillance of congenital rubella syndrome in babies with congenital anomalies. In our previous study,[3] the compiled data of 15 years (1988-
2002) showed the gradual declining trend of in-utero rubella infection in women with increasing trend of rubella immunity status among the women of child-bearing age at Delhi. Significant decline in CRS cases could also be seen from the study. However, periodic increase in rubella infection cases in pregnant women followed by increase in CRS cases in children was apparent from the study. In the present study, the compiled data of 2003-2006 gives yet another indication of rise in cases of rubella infection in the year 2004-2005 in a small section of women who remain susceptible to primary rubella infection in child bearing age and contract the infection during pregnancy thereby leading to increase in CRS load (2005 and 2006).

A total of 2039 samples were received from the year 2003 to 2006 from Delhi government hospitals and maternity centres. The blood samples belonged to: a) babies with congenital anomalies like cataract, congenital heart problems, microcephaly, hepatosplenomegaly etc. in the age group of new born to one year, b) pregnant women suspected for in-utero infection in the past or screening for immunity against rubella, and c) women with bad obstetric history (BOH, recent abortion cases). The samples referred to NICD belonged to mixed population of urban-rural areas but mostly from low socioeconomic strata.

The serum samples were tested for the presence of rubella IgG and/or rubella IgM antibodies. Rubella IgG assays were done using indirect ELISA based kits. Rubella-IgM antibody test were performed using commercially available μ-capture enzyme immunoassay. Kit instructions were strictly adhered to while processing the samples. Positivity of IgM antibodies against rubella in a sample indicates active infection of rubella. All the CRS cases were confirmed as per the WHO case definition of laboratory confirmed (rubella IgM antibodies positive with clinical manifestations) CRS cases.[7,8]

Women (1946, 95.4%) of child-bearing age (pregnant or cases of BOH) showed presence of rubella IgG antibodies indicating immunity against rubella (Table). Few sporadic cases of in-utero rubella infection could be seen during the period of study (Table) but there was definite rise in the rubella infection cases in the year 2004 and 2005. Rise in in-utero cases of rubella infection was followed by a definite rise in CRS cases in newborn babies (Table). Correlation found between the in-utero infection cases and CRS in babies was 0.70 during the study period.

Although there is significant decline in rubella associated congenital defects in babies by implementation of vaccination policy, a section of women (5-10%) unexposed to natural or vaccinated rubella virus remain susceptible and add the burden of CRS in society by contracting rubella infection during pregnancy as can be seen from the significant correlation between the in-utero infection cases and CRS in new-borns in the present study (Fig.).

A safe and effective rubella vaccine is available and there are proven vaccination strategies for preventing rubella and CRS which include vaccination of children or young adults or both and assurance of immunity in women of child bearing age. WHO recommends that current efforts in global measles control should be used as an opportunity to pursue control of rubella through the use of MR and MMR vaccine.[4,5] The findings in the present study warrant that rubella is still causing considerable burden on Indian society in terms of huge number of babies born with multiple congenital anomalies. There is an urgent need to implement rubella vaccination policy in India and surveillance of susceptible women in child-bearing age and CRS load in India.

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of women positive for Rubella-IgG antibodies / No. tested (%)</th>
<th>No. of women detected for in-utero rubella infection (positive for rubella-IgM)</th>
<th>No. of babies positive for rubella-IgM antibodies and confirmed for CRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>333/359 (92.7)</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>2004</td>
<td>783/807 (97)</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>2005</td>
<td>586/614 (94.4)</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>2006</td>
<td>250/259 (96.5)</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

Table: Serosurveillance of immunity against Rubella in child-bearing age group of women, intra uterine Rubella infection cases and CRS cases

Intrauterine cases and CRS cases-Fig.-1

Figure: Positive cases for in-utero rubella infection and CRS cases (Y-axis) plotted against the study period (X-axis) of the year 2003 to 2006
Dear Editor,

Leptospirosis is an emerging infectious disease with worldwide distribution. [1] It is endemic in most tropical and subtropical countries. In Sri Lanka, leptospirosis is a notifiable disease and around 1500 cases are reported annually to the epidemiology unit. [2] Almost all the cases are reported on clinical suspicion without laboratory confirmation. [3] Seroepidemiological data on leptospirosis in Sri Lanka is scarce. Hence, this study was conducted to identify circulating serovars among hospitalised patients with pyrexia for more than five days.

From October 2002 to November 2003, all patients admitted to teaching hospital Kandy, with suspected leptospirosis were included in the study. IgM ELISA was performed on all suspected cases and positive samples were confirmed using MAT. Twenty two reference strains belong to serovars australis, ballum, bataviae, bulgarica, canicola, celledoni, copenhgeni, cynopteri, djasiman, grippotyphosa, hardjo, hursbridge, javanica, kremastos, medenensis, pomona, panama, robinsoni, shermani, szwajizai, and zanoni were included in MAT analysis. Positive MAT was defined as a single titer of greater than or equal to 400.

Out of 473 suspected cases, 74(15.6%) were positive, 25(5.3%) were equivocal and 374(79.1%) were negative for IgM ELISA test. Age distribution of the IgM positive cases showed an equal distribution among all age groups. Out of the 74 positives 48(64.9%) were males and 26(35.1%) were females. Around one third (35.1%) of these positive cases were either housewives or unemployed males. Common occupational categories were manual labourers (14.9%), agricultural workers of farmers (10.8%) and soldiers (5.4%). In MAT analysis, 31 serum samples showed anti-leptospira antibodies of which 18 (24.3%) had a MAT titer greater than or equal to 400. The serovars identified included medenensis (4), australis (2), ballum (2), canicola (1), celledoni (1), cynopteri (2), hardjo (3), pomona (1) and robinsoni (2).

Our findings showed that the predominant serovars among the study sample were serovar medenensis and hardjo. Interestingly serovars copenhegani, which belongs to serogroup icterohaemorrhagia was not detected in the samples. Previous studies have identified serogroup icterohaemorrhagia as the commonly circulating serovar causing human infection in Sri Lanka. [4] Accordingly, disease control activities targeted the rodent population. [5] The present study raises the probability that other peridomestic animals may be the reservoirs for human leptospirosis in Sri Lanka. In addition, the traditional target group (farmers) accounted for only a part of risk group identified in the study.

According to these observations it is evident that epidemiology of human leptospirosis in Sri Lanka is either changing or not yet properly understood. We recommend a prospective study with proper sample size to provide evidence, which could be used for diagnosis, control, and preventive activities.

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References


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