Between July 2003 and August 2006, 121 children and adolescents with suspected TB were evaluated for study participation. Nine persons were excluded due to prior TB and eight due to HIV-infection. Thirty-six were randomly assigned to Neb group and 68 were assigned to control group.

The mean age and sex of subjects did not differ between groups; however, the mean sample volume (25 vs. 10 ml) and the proportion of samples that were visibly purulent (18/72 vs. 8/136) were higher in the Neb group ($p < 0.001$).

The proportion of patients with positive GL smears was 36% in the Neb group vs. 22% in the control group ($p = 0.4$) or cultures (82% Neb group vs. 78% control group; $p = 0.65$) (Table 1). In the control group, the first GL sample was positive in seven patients. However, an additional six and one patient, respectively, tested positive in the second and third lavage samples, increasing the diagnostic yield by 33.4 and 5.5%. In the Neb group, *Mycobacterium tuberculosis* was identified in first lavage sample in seven (63.6%) patients. An additional two patients tested positive in the third sample, increasing the diagnostic yield by 18.2%.

We found that nebulization with hypertonic saline before GL does not improve the diagnostic yield of gastric lavage. Other strategies are needed to improve the diagnosis of TB in children.

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**References**


**Correspondence:** Ethel Leonor Maciel, Núcleo de Doenças Infecciosas-NDI-Universidade Federal do Espírito Santo, Av. marechal Campos, 1468-Maruípe-Vitória, ES-Brazil, 29040-090. E-mail: <emacie@ndi.ufes.br>

**Risk Factors of Congenital Heart Disease in South Kerala**

The prevalence of congenital heart disease (CHD) per 1000 population varies from three for clinically severe conditions [1], six when including moderately severe conditions and 9–15 [2,3] when including small septal defects and mild valvar stenoses. The burden of CHD in India is likely to be enormous due to a very high birth rate. Kerala state in India has an infant mortality rate (IMR) of about 12/1000 live births [4], which is the lowest in the nation (where
IMR is about 58) [5]. As IMR comes down, the cause of infant death is more due to congenital anomalies and their sequelae, the incidence of which is difficult to bring down. The objective of this study was to identify the risk factors of CHD among children in South Kerala.

Study design was that of a case control study conducted among patients who attended ECHO examination at SAT Hospital, Trivandrum, Kerala from September to December 2008. A total of 325 children including 125 cases and 200 controls were selected and interviewed using a structured questionnaire. Cases were children <12 years, diagnosed with CHD by echocardiogram. CHD is excluded in the control group using the same diagnostic tool. Data were analyzed statistically using chi-square test for significance. The strength of association was measured using odds ratio and its 95% confidence limits. Binary logistic regression analysis was done following a forward stepwise method to eliminate confounders.

After analysis, the factors with significant odds ratio were found to be Gestational Chronic Respiratory disease (3.02), Maternal Phenyl Ketonuria (2.65), Family History of Congenital diseases (1.835), Low Birth Weight (3.38), Gestational Diabetes Mellitus (GDM) (3.41) and Gestational Phenytoin intake (10.9).

Analysis using binary logistic regression showed the significant risk factors to be:

1. Low birth weight (<2.5 kg at birth) babies; corrected odds ratio: 3.38 (1.96–5.78); \( p < 0.001 \).
2. Gestational diabetes; odds: 3.41 (1.67–6.96); \( p < 0.001 \).
3. Gestational phenytoin intake odds: 10.9 (2.21–74.32); \( p < 0.05 \).

The risk factors of CHD identified are associated with the exposures during antenatal period. Maternal health care practices existing in India and in other developing nations are not equipped to handle the changing scenario. The National Health programmes related to maternal health is still focussing on problems like anemia and infections. This study highlights the importance of restructuring the Maternal and Child Health Care to incorporate a comprehensive antenatal health care including maternal nutrition, prevention and management of GDM and proper treatment of epilepsy in expectant mothers.

**References**


Correspondence: Ram V. Nampoothiri
House No. 5, Vishnu Nagar, Pappanamcode PO, Trivandrum - 695018, Kerala.
E-mail <ramvnampoothiri@gmail.com>.