Editorial

Issues in Pediatric Tuberculosis Under DOTS Strategy

Global estimates have reported 1.5 million new cases due to tuberculosis (TB) in children. However, these figures appear to be an under estimate of the size of problem because of diagnostic difficulties. Globally National TB Control Programs have accorded low priority to children because of limited resources and lack of data on treatment(1). Within the country, efforts have been made by Indian Academy of Pediatrics for framing guidelines for diagnosis of childhood tuberculosis(2). Tertiary hospital based study, published in this journal, discussed the feasibility of classification and treatment of various types of childhood tuberculosis suggested by World Health Organization under Directly Observed Treatment Short Course (DOTS*) strategy and modification thereof with treatment completion rate of 80% in subjects. The authors concluded that the case holding in the patients could have been better if all medicines were provided free of cost and regular contact was made for those who did not come for follow up(3).

DOTS has been observed to be a successful treatment strategy for tuberculosis in more than 180 countries over the last decade and takes care of the deficiencies observed in earlier TB control program. In India, under Revised National Tuberculosis Control Program (RNTCP), DOTS strategy has been implemented in more than 850 million population and WHO targets of case cure rate (>85%) and detection rate (>70%), appear in sight. Efforts to involve the children under purview of RNTCP have recently resulted in the development of guidelines for management of pediatric TB(4) and there is prompt need to enforce these guidelines.

The Consensus Guidelines of Management of Pediatric Tuberculosis under DOTS strategy at the national level recommend that diagnosis of disease should be based on a combination of clinical presentation, sputum examination (wherever possible), chest *X*-ray, Mantoux test and history of contact. Further, in face of diagnostic difficulties, the child needs to be referred to a pediatrician for appropriate management(5). Such a practice is likely to resolve most of the diagnostic uncertainties of pediatric TB and needs to be adopted uniformly by all medical practitioners in both public and private health sectors.

There is however a logistic problem for the supply of Purified Protein Derivative (PPD) for diagnostic purposes under Revised National TB Control Program at the peripheral level. BCG lab in Guindy used to supply 1TU RT23 PPD in the country. The Lab was supplied a seed stock of tuberculin powder from Serum Staten Institute (SSI) Copenhagen many decades ago. This supply has now ceased due to the stated seed stock being out of stock and SSI is unable to supply the tuberculin powder from the seed stock. Further SSI does not routinely manufacture 1TU RT23 PPD vials. In our country the diagnostic firms produce PPD of 2TU/5TU in 0.l mL Tween 80-0.05% stabilizer and the same is being used by many institutions, without proper standardization of potency,

** DOTS is the brand name (not an acronym) given to the current international strategy for TB control endorsed by WHO & IUATLD.*

specificity, antigenicity and stability. There is therefore, a need to prepare large batch of tuberculin-PPD either in association with SSI or through WHO and UNICEF, so that quality control of highest level can be achieved. The institutions, which are using 2TU/5TU for tuberculin test also have to look into the frequency distribution of reaction sizes so as to standardize the cut-off points to avoid inter/ intra reader variability. In the present scenario, the test even though very important in pediatric population has its own logistic and standardization limitations.

Problems are experienced during execution as well as during termination of therapy in children with TB. However, with the recommendation of a category-wise management approach in RNTCP for both adults and children, it has become easier to classify the disease and to institute the treatment for requisite duration with greater confidence. Using DOTS strategy, a study from LRS Institute of TB and Respiratory Diseases reported high sputum conversion (93%) and treatment success rates (96%) in 930 children with TB(5). With the attention of national program managers currently focused on DOTS for all TB patients, it is necessary to ensure the advocacy of management strategy of disease in children as well. Pediatric patient wise boxes in relation to weight bands (< 10-30 kgs) in Combipack are required to be procured at the earliest for free distribution under the National Tuberculosis Control Program. Fixed dose combinations can also be considered to avoid many tablets, multiple dosage formulations and boxes. Further bio-equivalence studies are required for single drug formulations vs fixed dose combinations.

Addition of Ethambutol to the treatment regimens of childhood TB has always remained controversial. However, increasing evidence is available that its usage in young children is safe(6,7). Accordingly, pediatric management guidelines have advocated an Ethambutol administration in the Category I and II regimens, in a manner, similar to that of the recommendations existent for adults under DOTS program.

Categorization under RNTCP for both adult as well as pediatric TB cases has been followed as per the WHO recommendations(8). However, in view of the surrounding controversy that a fourth drug like Ethambutol should be added to the Category III regimen (converting it into a Category I regimen), the guidelines may necessitate appropriate modifications in future. Further studies are required to find end point of cure in Extra-pulmonary TB (EPTB) cases in children.

Chemoprophylaxis is an effective and safe form of prevention of tuberculosis in childhood because it aims at the avoidance of development of TB infection into a disease state. However, the correct dose of isoniazid is still controversial (5 mg/kg *vs.* 10 mg/kg). Recent studies have shown that lower dose given for 6 months is effective and also has fewer side effects. It has been therefore accepted under the guidelines. Developed countries have already changed the nomenclature for screening to targeted tuberculin testing and from preventive therapy to treatment of latent TB infection in both HIV infected/HIV-uninfected patients for elimination of this disease(9). In India, because of the epidemiological proportion of disease, efforts should be made for contact screening of smear positive family members especially the mothers. Such contacts (first targets) should be given Isoniazid chemoprophylaxis, so that spread of the disease can be controlled in pediatric population. Administration of DOTS to a child at the center means the incumbent will have

dependability upon either parent, and could miss the school due to clash with center - timing. In addition, a female child might be held from seeking treatment at a public center owing to the social stigma of disease. However, utilization of provider services has been shown to result in a successful DOTS execution in TB patients unable to accept the treatment due to a specific reason like inconvenient center-timing mingling with job, study and household work, unavailability of nearby DOTS center, social stigma or physical disability(10). With training and supervision, the 'mother' could serve as a DOTS provider just like the other community members such as neighbors, family friends or relatives.

Making availability of pediatric medications, preparing pediatric training modules, carrying out training of health personnel including the private practitioners and effecting changes in the formats for data recording are other issues that would need appropriate intervention. DOTS-plus, a complementary DOTS based strategy for MDR TB(11), has achieved favorable results in the management of pediatric cases in Peru(12). However, such trials still need to be conducted in the pediatric context within the country.

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