Early Diagnosis Of Childhood Mycobacterial Infections-Tuberculosis & Leprosy

Rajeshwar Dayal
Department of Paediatrics,S.N.Medical College, Agra, India

The genus Mycobacterium includes pathogens known to cause serious diseases, mainly tuberculosis (*Mycobacterium tuberculosis*), leprosy (*Mycobacterium leprae*) and Non Tuberculous Mycobacterial infections(M avium, M intracellulare and M fortuitum).

Early diagnosis of T.B. in children is often challenging due to vague clinical manifestations and difficulty in isolating M.Tb.

Cheap and easy microscopy using Ziehl nelson stain has been employed as the initial diagnostic tool for tuberculosis. Poor sensitivity remains a major drawback of this method.

Culture in liquid media has been the gold standard for bacteriological confirmation of TB.

Imaging tools aid in the diagnosis specially where bacteriological confirmation maybe difficult.

Molecular methods such as polymerase chain reactions (PCRs) allow direct identification of M.Tb in clinical specimens. Molecular LPAs allow rapid detection of resistance to rifampicin (alone or in combination with isoniazid) in AFB smear-positive sputum specimens or on *M. tuberculosis* isolates grown by conventional culture methods.

However, various recent studies including our own have demonstrated the efficacy of CBNAAT-XpertMTB/RIF and it is now recommended as the initial diagnostic test.

Early diagnosis of leprosy requires a high index of clinical suspicion . It is based on detection of 2 of the following features, namely, characteristic skin lesions, loss of sensation and thickened peripheral nerves or the detection of AFB in skin or nasal smear.

We have conducted a number of studies, evaluating various newer techniques for early detection of the disease. Fluorescent leprosy antibody absorption technique (FLA-ABS) and Lepromin tests are of immense value for identification of "at risk" population and for detecting subclinical infection.

Gene probes developed at our institute detected all smear positive and lepromin negative cases and majority of smear negative cases.

Evaluation of the In-situ PCR technique revealed that whereas histopathology detected 45% of total cases, In Situ PCR detected as much as 60% of the total cases.

In another study , In-situ hybridization technique helped in diagnosing children with negative skin smear and non specific histopathology.

RLEP PCR is a new technique. Our pioneer study has shown its immense potential in early diagnosis of leprosy specially where skin smears are negative and skin biopsy is not feasible.

With the great morbidity and mortality associated with mycobacterial infections early diagnosis is the need of the hour.