



Childhood Tuberculosis: Changing Trends, Challenges and Way Forward

KEYWORDS

Tuberculosis, Pediatric, Challenges

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ABSTRACT Tuberculosis is the first infectious disease which was declared global health emergency in 1993. It is an important cause of morbidity and mortality in adults and children but children have been largely ignored and have not benefitted from the advances in diagnosis and treatment. This article is to sensitise scholars of all the disciplines to pediatric tuberculosis, to give an idea of the new updated national guidelines on pediatric tuberculosis and challenges faced by it.

Introduction:

Tuberculosis (TB) is an age old disease which is one of the leading causes of mortality and morbidity in developing country.(1) It is still considered as the disease of the adults overlooking the pediatric population which makes 15 to 20% of cases in high burden setting, with an incidence estimated at roughly 50% of that recorded in adults.(2) In India, the first open air sanatorium for treatment and isolation of TB patients was founded in 1906 in Tiluana, near Ajmer.(3) Since then many other Non Government Organisations (NGOs) came forward to help the sufferers. In 1992 the Government of India launched the Revised National TB Control Programme (RNTCP) in the country, but is it in 2006 almost after 100 years of work in adults, the World Health Organisation (WHO) first published specific guidance for national TB control programs on the management of TB in children. (4) WHO requested all National TB control Programmes (NTPs) to report future TB cases in 3 age categories; < 5 years, 5-14 years and adult cases (>15 years) for availability of more accurate figures in the near future and to revise treatment guidelines. Based on recent evidence from NTPs and advances in pediatric TB diagnosis and treatment in consultation with Indian academy of Pediatric, during January – February 2012 National Guidelines on Pediatric diagnosis and management were updated. (5)

Need and purpose of the review:

This updated guideline is still not practiced by many health care providers including pediatricians. This article is a modest attempt to discuss the major changes in the updated guidelines through one of the highly indexed journal of India read / shared by scholars from all disciplines. This article does not cover the complete guidelines, diagnosis methods and treatment etc in details which is out of its scope.

Burden of Pediatric TB:

It has been estimated by the World Health Organisation (WHO) that worldwide there are 490,000 cases of active TB and sickness in children, and 64,000 deaths of children from TB each year.(6) The only published estimate on the global pediatric TB disease burden are outdated and likely represent an underestimate of the current situation. Of the estimated 8.3 million new cases of TB diagnosed in 2000, 884019 (11%) were children less than 15 years of age. (7)

Under detection of child cases:

Childhood TB is grossly under detected in most TB endemic areas due to multiple reasons as follows: (8)

- Difficulties with access to TB diagnosis and care
- Clinical similarities with other common childhood diseases
- Children treated for TB outside of national TB programs (NTPs)
- A lack of routine recording and reporting of childhood TB cases by age and outcome by some NTPs.

This difficulty in detecting TB and lack of routine recording and reporting make its diagnosis unlikely resulting in open cases of the diseases in the society making it a vicious cycle.

Updated Guidelines – Major Changes:

There are only two treatment regimens one for treating 'new cases' and another for treating 'previously treated patients'. Category III regime has been withdrawn in view of high INH resistance (>5%) in our community

In view of the latest WHO guidance, the drug dosages have been rationalized for childhood cases. There are now six weight bands (6-8, 9-12, 13- 16, 17-20, 21-24 and 25-30 kg) and the existing pediatric weight wise boxes (PWBs) are to be used in different combinations to meet these expectations. In future, three generic patient wise boxes (instead of the existing two) will be used in combination to treat patients in these six weight bands. It would take at least 2 years for supply of these new products under RNTCP.

The major recommendations of the WHO drug dosage guidance for children are that:

- Isoniazid(H) 10mg/kg (range 10-15 mg/kg); maximum dose 300 mg/day
- Rifampicin(R) 15mg/kg (range 10-20 mg/kg); maximum dose 600 mg/day
- Pyrazinamide(Z) 35mg/kg (30-40) mg/kg)
- Ethambutol(E) 20mg/kg (15-25 mg/kg)

TB preventive therapy: The currently recommended dose of INH for chemoprophylaxis is 10 mg/kg, instead of earlier recommended dosage of 5 mg/kg to be administered daily for 6 months wherever it is indicated.

Discussion:

The updated National guideline on pediatric TB has made many changes based on recent evidences and advances apart from what has been discussed above. A complete new algorithm for diagnosis, dosing and prevention is developed which is not discussed. There is increase in dose of isoniazide (H) from 5 to 10 mg/ kg, rifampicin (R) from 10 to 15 mg/kg, pyrazinamide (Z) from 25 to 35 mg/kg but the doses of ethambutol (E) and streptomycin remained same i.e. 20 mg/kg and 15 mg/ kg respectively. Thus there is increase in the doses of two most important anti tubercular drugs which are the backbone for TB treatment. Earlier there were four categories according to the patient weight like 06 to 10 kg, 11 to 17 kg, 18 to 25 kg and 26 to 30 kg, now there are 6 categories as discussed above to ensure that every child gets correct doses, being more precise in the treatment. It is also agreed that, all pediatric TB patients should be shifted to next weight band if a child gains a kilogram or more, above the upper limit of the existing weight band. Since, the number of tablets is too many to consume and younger patients have difficulty in swallowing tablets the DOT centers will be provided with pestle and mortars for crushing the drugs.

There are still many challenges to the pediatric TB like in-

sufficient training on diagnosis and treatment of childhood TB, decentralizing and difficulty making available new diagnostic technologies, poor engagement of the private sector in childhood TB diagnosis and reporting, non availability of TB drugs in compliance with updated WHO guidance (and inclusion in NTP guidelines), inadequate TB dosing among children due to weight gain.(9) There is increasing incidences of MDR-TB in children which may emerging as a major challenge in near future.(10) To make child friendly formulations of TB drugs and fixed drug combination is also one of the important challenge faced by government.

Keeping the interests of the Nation at large, it is urged that all the clinicians, teachers, academicians, researchers or any person dealing with pediatric tuberculosis within the Government or Private or non-governmental sector should adopt these guidelines for the diagnosis and treatment of pediatric tuberculosis in India. Further detail of the subject can be obtained from the references mentioned.

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