EDITORIAL

Childhood TB: Situation Analysis and the Potential Solutions

Tuberculosis (TB) is one of the leading causes of morbidity and mortality of children in tuberculosis-endemic areas[1]. Based on vital registration data, World Health Organization (WHO) in 2014, estimated that 1 million children (<15 years) suffer from TB worldwide and 140,000 die each year, representing 10% and 9% of global caseload and mortality, respectively[2]. This *"merciless disease"* exists in the shadow of adult TB and children particularly those under 5 years of age, who came in contact with smear positive adult TB cases and who suffers from malnutrition and HIV infection are the most vulnerable group to acquire tuberculosis[3]. Childhood TB (CTB) remains a neglected aspect of the TB epidemic, despite its contribution to 20% or more of the TB case-load in many countries with high TB incidence[2]. Among the 4,452,860 new cases reported in 2010 by the 22 highest TB burden countries, only 157,135, i.e. 3.5% (range, 0.1 to 15.0), were reported as CTB[4]. However, the best estimates suggest that children (under 15 years of age) account for approximately 11% of the total TB burden,reflecting that just over 332,000 (7.5%) of CTB went undiagnosed or unreported in these countries[4-5].

In light of these facts we can assume that, the actual burden of CTB is likely higher, but is not reflected in data because of challenges in diagnosing the cases. The barriers of diagnosis are related to not obtaining high quality specimens, pauci-bacillary nature of the disease in young children and lack of mycobacterial culture facilities in settings where TB and malnutrition are endemic, even when available, the longtime delay in getting results of culture and sensitivity [6]. Although, the gene X-pert MTB/RIF assay (Cepheid, Sunnyvale, CA, USA) is a new, rapid diagnostic test for the detection of M tuberculosis than culture it is demonstrating encouraging results in the diagnosis of pulmonary TB especially with greater sensitivity. Still, the sensitivity is less than 70% compared to culture in children[6-8].

Reviewing the previous data, we can also postulate that poor ascertainment and reporting of TB casesis another limitation and actually it prevents accurate estimation and true picture of the global burden of CTB[9]. Many a times, deaths of HIV-infected children with TB is recorded as death due HIV and not as TB [10]. Similarly, in endemic settings, TB is commonly found in children dying with pneumonia and reported as death from pneumonia not from TB[6, 11, 12].

Despite all these limitations, evidence indicates that global case detection of TB is improving, and it is mainly due to intensified case finding following WHO guideline, notification through a harmonized bridging between government and non-government organizations, scrupulous adherence to national TB guideline, and implementation of DOTs program in many TB-endemic countries[2,13,14]. However, the scenario is not the same in many TB-endemic countries including Bangladesh where under-estimation of childhood TB is still prevailing.

Bangladesh stands 7th amongst the 22 high TB burden countries in the world. As in many high-Tb burden countries, childhood tuberculosis (CTB) is also grossly under-detected in Bangladesh[15]. In 2007, Bangladesh National Tuberculosis Programme (BNTP) reported incidence of childhood TB as 9 per 100 000 [16]. In 2011, of the total 155,673 newly reported TB cases, only 4,672 (3%) cases occurred in childrenunder15 years[17]. The National incidence of CTB among 0-14 years old children were 9 per 100,000 reported by the NTP in 2007 and 8.6 per 100,000 reported by the Damien Foundation in 2009[18]. However, extrapolating data of best estimate (CTB;11% of total case load), the estimated incidence and prevalence of CTB is likely to be 25/100,000 and 45/ 100,000 respectively in Bangladesh[19].A survey conducted by ICDDR,B in 2008-09 in Madhupur, Tangail, showed incidence of CTB as 52 per 100,000 among 0-14 year children which is about 6 times higher than BNTP data[20]. TB prevalence among adults in the same area was estimated at 207/100 000 population, with children representing approximately 20% of all cases identified.

Although, this does not represent national incidence of CTB, it definitely indicates a gap between reported and actual disease burden in the communities. Using these numbers, it is estimated that around 21, 000 children with TB remain undetected each year in Bangladesh. The plausible reasons behind this underestimation may be i) poor awareness about childhood TB ii) difficulties in access to TB diagnosis and care iii) clinical similarities with other common childhood diseases iv) Treatment of CTB outside the national TB program v) lack of routine recording and reporting of the cases and most importantly vi) lack of systematic screening for TB among children living in the same households affected by TB[19]. In addition, recommendations of INH preventive therapy (IPT) for children, under 5 years of age is rarely implemented[20].

The delay in diagnosis or under-diagnosis of TB among children leave them in jeopardy and often results in serious consequences and fatal outcome[21]. Any child living in a setting where there are people with infectious TB can become ill with TB, even if they are vaccinated. Current TB vaccine protects young children against the most severe forms of TB, such as meningitis and disseminated TB disease, but prevention of transmission from an infectious contact is variable. We do not know the extent to which TB is a cause of childhood deaths because many of them are reported in global statistics as deaths due to HIV, pneumonia, malnutrition or meningitis, but the number is likely to be substantial[2].

Therefore, to alleviate this situation, strengtheningTB case detection as well as reporting is very important. It is possible through orientation &training on TBof health workers to understand and improve their clinical skill of TB diagnosis, masspeople awareness through advocacy, counseling and social mobilization, active contact search and mandatory reporting of the cases. In addition, diagnosis and early initiation of treatment of children with TB having associated comorbidities will help to reduce TB related deaths. We need to move beyond the traditional approach of TB care by working synergistically across the entire health system and partnering with communities to reach the goal of zero TB deaths in children.

To achieve that, we need determined leadership, political commitment at all levels, joint efforts by all the stakeholders involved in TB care, relentless and robust research on CTBand of course mobilization of increased resources and this is the demand of time.

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