BEYOND BCG

Easier said than done, tuberculosis (TB) is a preven-table and curable disease. The main key steps for the prevention of TB are to minimize transmission by early diagnosis, reduce infection translating into the disease by treating the latent tuberculosis infection and improve immunity through vaccination.

Humanity in general and the medical community, in particular, can never thank enough the two French scientists, Albert Calmette (1863-1933) and his junior colleague Camille Guerin (1872-1961), for developing the BCG (Bacille Calmette Guerin) vaccine.

Preparing the vaccine was by no means an easy task as it took the relentless effort of almost eleven years, continued even during the difficult circum-stances of world war I, to attenuate a strain of Myco-bacterium Bovis through 230 subcultures before putting it for use in humans in 1921.[1]

After over one hundred years, it remains the only vaccine for tuberculosis. It has saved millions of lives globally and is part of the vaccines recommended by the WHO for children born in underdeveloped countries and children born in high-risk settings in developed countries.

However, the limitation of the BCG vaccine is that it prevents the severe forms of primary tuberculosis in children, namely tuberculous meningitis and miliary tuberculosis and not pulmonary tuberculosis, a form through which the disease spreads. In addition, it is not very effective in adults.

The efficiency of this slender, acid-fast bacillus is such that whenever we look for tuberculosis in any text, it starts with the sentence that almost one-third to one-fourth of the world population is infected with Mycobacterium tuberculosis. That makes it about two billion people. Five to fifteen percent of whom stand at the risk of developing the disease.

Pakistan is a country with a population of almost 220 million. According to the WHO fact sheet, the situation is indeed not very encouraging, i.e., we rank fifth among the high burden countries worldwide with almost an estimated 510000 cases of new TB cases emerging each year. We also contribute 61% of the TB burden of the Eastern Mediterranean Region of the WHO.[2]

The development of anti-TB drugs lasted only eighteen years. Starting from streptomycin in 1944 and concluding with ethambutol in 1962. Unfortunately, the unsupervised, inappropriate and inadequate use of these antibiotics has led to the emergence of multidrug -resistant MDR TB and the extremely drug-resistant XDR TB.

Tuberculosis was vanishing fast from the developing countries till the epidemic of HIV/AIDS reversed the situation in the mid-80s, but it never left the resource-limited ones.

TB hits more men than women and that too in the most productive years of life, between 15-40 years of age, people who are poor, undernourished and living in crowded environments-so much so that it has been told that poverty is the diseases and TB its symptom.[3]

The sustainable goal 3.3 of the WHO to end or minimize TB, along with AIDS and malaria by 2030, was severely interrupted by the COVID19 pandemic. Nevertheless, the pandemic also taught us that vaccines could be developed in a shorter time.

There are about 14 candidate vaccines in the pipeline, but it will still take some time to reach those who need them the most-the slow growth rate of Mycobacterium tuberculosis, ethical issues and the time required to get it approved by the FDA.[4]

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