EDITORIAL

Multidrug Resistant Tuberculosis and Importance of DOTS

Iqbal Ahmad Khan

Globally millions of people become sick each year with tuberculosis and it is one of the top 10 causes of death worldwide.[1] According to World Health Organization (WHO), the incidence of tuberculosis was 10 million in 2017 and reported TB mortality was 1.6 million globally.[2] Pakistan is one of the 30 high burden countries for tuberculosis worldwide with 61% of TB burden in Eastern Mediterranean Region of WHO. In Pakistan, 510,000 new cases of TB emerge each year and around 15000 cases develop drug resistant tuberculosis annually.[1]

In recent years, prevalence of drug-resistant TB has increased and became a continued public health crisis worldwide. There are three forms of drug resistant cases of tuberculosis: RR-TB, (Rifampicin Resistant-Tuberculosis), MDR-TB (Multidrug Resistant-Tuberculosis) and XDR-TB (Extensively Drug Resistant-Tuberculosis). According to WHO, 160684 cases of MDR/RR-TB (Multidrug Resistant/ Rifampicin Resistant) were reported in 2017 all over the world. Pakistan has fourth highest prevalence of multidrug resistant TB (MDR-TB) globally.[2]

Drug resistant tuberculosis is a potentially devastating threat to TB control as it gives emergence to the strains that cannot be cured by standard first line anti-tuberculosis treatment.[3] MDR-TB cases are resistant to isoniazid and rifampicin. After developing resistant to first line therapy, patient is treated with prolonged and extensive therapy of second line injectable drugs. If patient develops resistance to second line injectable drugs then it is termed as extensively drug resistant-tuberculosis (XDR-TB). At this level disease becomes virtually untreatable.[3]

As treatment success remains low, at 55% globally, there is an urgent need to improve the quality of diagnosis, treatment and care for people with drug resistant tuberculosis. Key reasons for developing drug resistance among TB cases are: Delayed diagnosis, unsupervised treatment, inappropriate drug regimens, lack of social support in the communities and lack of timely follow-ups. To close these gaps, much work is required for: drug susceptibility testing among diagnosed cases of TB, reducing under-diagnosis of TB cases, improving access and supervised continuous treatment, designing new diagnostics, new medicines and treatment regimens with higher efficacy and better safety.[2]

Progress is being made in diagnostic test technologies but still there is need to overcome questions related to validation and assessment of these technologies to make ideal diagnostic test available with high sensitivity and specificity levels.[4]

As previously reliance on passive case finding has not helped to stop TB pandemic. So active case finding and screening strategies instead of passive case finding of infectious cases are also needed to eradicate the disease. TB has been declared as global epidemic. The UN's first high-level meeting in 2018 on TB, was given the title as “United to End TB: An Urgent Global Response to a Global Epidemic”[1].

TB DOTS (Directly observed treatment, short course) has been recommended by WHO since 1994, as a strategy to treat TB cases and to get control over its prevalence. TB DOTS had five components for effective treatment and control of disease as following:

1. Sustained political and financial commitment by the government
2. TB diagnosis with sputum smear microscopy
3. Standardized short course treatment given under direct observation for 6-9 months
4. Uninterrupted and regular supply of anti TB drugs
5. Standardized recording and reporting of disease.[4]

In 1999, WHO launched “TB DOTS-Plus” as a strategy to control TB resistance by adding second line drug into already adopted DOTS components because DOTS did not account for TB resistance cases rather caused MDR-TB when treatment was repeated among untreated cases for prolonged duration.

Correspondence:
Prof. Iqbal Ahmad Khan
Head of Department of community medicine /Public Health
Women Medical and Dental College, Abbottabad
E-mail: profkhakwani@gmail.com

Received: May 01, 2019; Accepted: May 25, 2019

DOTS-Plus ended in 2006 due to resource constraints and subsequently WHO decided to expand TB DOTS again, by redefining the TB DOTS with focus on TB diagnosis, treatment and care of patients. The global plan to stop TB by 2015 included TB control targets that were covered under the targets of Millennium development goals (MDGs).[1]

After 2015, another global plan to end TB by 2020 was "WHO End TB strategy" which emphasized on a need of paradigm shift for radical change in TB survillenc and to set targets to be met in coming years. The focus of End TB strategy is to improve tools for case finding among high risk population, treatment of new cases and detection of drug resistance among TB cases. It is also to be understood that only improving diagnostic technologies will not reduce disease transmission unless early detection of infection and treatment of cases will not be carried out.[1]

DOTS are still considered effective for treatment of new cases of TB and prevention of RR-TB/MDR-TB. Failure to adapt DOTS in its true spirit is the leading cause of increased drug resistance cases of tuberculosis globally. The most important part of TB DOTS is the role of treatment supporter. Treatment supporter ensures that patient has taken right drugs in appropriate doses and enters its record in patient's treatment card. In stop TB strategy, patient supervision and support to complete treatment course without skipping any dose is the cornerstone of DOTS for achieving TB control with maximum treatment success rate globally.[5]

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