Comments :

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Sir, — Our fight against TB started with prayers and rituals, then isolation in sanatorium and then by surgery. Following the discovery of streptomycin (SM) by Wakesmann in 1944 the anti-TB chemotherapy started. Subsequently para-amino salysillic acid (PAS) followed by ethambutol (ETB) were added as companion drugs. Anti-TB chemotherapy was divided into intensive phase (for killing bacilli) and continuation phase (for prevention of relapse). With the discovery of rifampicin (RIF) and reintroduction of pyrazinamide (PZN) the *short course chemotherapy* (SCC) started. SCC is based on conceptual division of tubercular bacilli into i) rapidly multiplying bacilli (can be killed by all bactericidal drugs), ii) bacilli having intermittent spurts of growth (only RIF is effective), iii) intracellular bacilli in acid medium (PZN is effective) and iv) totally dormant bacilli (no drug is effective).

In India, *National Tuberculosis Control Program* (NTP) was started in 1962 aiming the control of TB with 5 drug regimes. In 1983, SCC was incorporated in NTP. In 1992 NTP was reviewed and was found to be a failure with only 30% case detection rate and out of them only 30% were treated successfully. Overall, with introduction of anti-TB chemotherapy the death rate was reduced and cure rate was improved substantially. But the *epidemiologically significant pool* that spread the disease remained unchanged to around 20%. More importantly, wild bacilli were replaced by drug resistant bacilli. Plethora of factors were thought to be responsible for NTP failure including more stress on radiology for diagnosis of TB, lower case holding rates, irregular drug supply, non-compliance etc.

Consequently, a change of NTP became inevitable and *Revised National Tuberculosis Program* (RNTCP) was conceptualized. In 1993 DOTS (directly observed treatment short course) pilot projects were undergone and gradually entire country was covered under RNTCP in March 2005. In RNTCP intermittent chemotherapy was prescribed based on the concept of "lag period", the time taken by the bacilli to recover and grow after cessation of exposure to a particular drug. Regimes prescribed are Cat I – for new seriously ill TB, Cat II – for older TB, Cat III – for new less serious TB and Cat IV – for drug resistant TB. Subsequently Cat III was withdrawn.

In 1993, world health organization (WHO) declared TB as *Global Emergency*. WHO guideline (2010) seriously questioned the usefulness of intermittent chemotherapy. WHO recommended daily regime and addition of ETB in continuation phase, particularly in countries with high initial INH resistance. After some initial delay and denies, RNTCP accepted WHO guideline and switched over to daily regime and added ETB as a third drug in continuation phase.

With the discovery of *molecular diagnostic tests*, WHO recommended cartridge based nucleic acid amplification test (CBNAAT) as point of care test (POCT) and line probe assay (LPA) for referral laboratory. Accordingly, RNTCP included molecular diagnostic tests. After initial CBNAAT testing of clinical material, TB cases are now classified into RIF-sensitive and RIF-resistant cases. RIF-sensitive cases are to be tested with 1st line LPA to detect INH and RIF resistance. RIF-resistant cases are to be tested with both 1st and 2nd line LPA to detect in addition the resistance to fluoroquinolone and injectable drugs. Two new drugs, Bedaquiline and Delaminidin, have been incorporated in RNTCP for use in drug resistant TB. Recently, 4 regimes are recommended in RNTCP i) regimen for drug sensitive TB, ii) regimen for isolated INH resistant TB, iii) longer all oral regime for drug resistant TB and iv) a shorter MDR-TB regimen.

We can analyse *the failure of NTP* in light of article published in JIMA 1970 January by Dr. D Banerji (Cornell). NTP was based on several assumptions.

Passive case finding based on the fact that large population of TB symptomatics seek treatment at various health institutes. We had limited resources available at that time. But TB still carries a social stigma and many TB symptomatics went to alternative treatment. Now, active case finding has been incorporated in RNTCP. The assumption that those who came by themselves would complete treatment was proved wrong. Patients came for symptoms and as expected they stopped treatment after relieve of symptoms (usually after 2-3 months). RNTCP is based on the concept of DOTS, treatment under supervision.

Integration of TB program with general health service made the importance of our fight against TB diluted as for example funds for NTP get diverted to other health services. As TB is a slow killer it draws less attention and more importance is given to rapidly killing diseases by health care system and media. Moreover, little stress has been given to TB in our MBBS curriculum. Recently government of India give more emphasis and separate budget for TB has been allotted.

Domiciliary treatment is based on the legendary Madras Chemotherapeutic Centre trial with small sample size, and it may not be accepted in current standard. As a result TB sanatoriums were closed. The lack of isolation might have enhanced the spread of TB in community, particularly in immuno-compromised persons. Nosocomial TB is now a recognized entity. Nowadays RNTCP proposed to open PMDT (Programmatic Management of Drug-resistant Tuberculosis) wards in medical colleges.

Diagnosis based on *sputum microscopy* has its problem particularly non-availability of samples in elderly, children, very ill patients and in extra-pulmonary TB. Even in pulmonary TB sputum positivity is found in less than half of the cases. RNTCP has incorporated molecular diagnostic tests for better diagnosis of TB and simultaneous detection of drug resistance.

In May 2012, Government of India has declared TB a *notifiable disease*. In 13th March 2018 our Prime Minister set a goal to *eliminate TB by 2025*, 5 years ahead of global target. In that direction RNTCP has been renamed as *National Tuberculosis Elimination Program* (NTEP) on 30th December 2019. The goal can only be achieved with active participation of all Indian citizens. We should actively participate in this sincere attempt by our Prime Minister, so that our next generation will not be subjected to the scourge of TB.

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