Revised National Tuberculosis Control Programme: Current Status and Challenges

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Abstract :

Introduction : Tuberculosis is an infectious disease caused predominantly by *Mycobacterium tuberculosis*. India, the world's second most populous country, accounts for a quarter of the world's annual incidence of tuberculosis. With the implementation of Revised National Tuberculosis Control Programme (RNTCP), India has taken huge strides towards the reduction in mortality and morbidity due to TB. But there are many challenges for TB control in India. **Objectives :** To analyze the RNTCP data at our Direct Microscopy center (DMC) and to compare it with the data available in literature. This study also aims to identify challenges faced by our DMC and to address the same. **Methodology :** 1012 patients were analyzed retrospectively referred to our DMC with clinical suspicion of tuberculosis during the period of January 2013 to December 2014. **Result :** Of the 1012 patients referred, 345 (217 males, 128 females) were diagnosed with tuberculosis. 339 were adults and 6 were paediatric patients. Of the patients diagnosed, 206 had Pulmonary TB (145 were sputum positive and 61 were sputum negative) and 139 had Extra-Pulmonary TB. Though 345 patients were referred for Directly Observed Treatment Short Course (DOTS), 317 started treatment from their respective DOTS center. Of the 28 patients who did not reach the DOTS center, 24 were sputum positive Pulmonary TB patients. **Conclusion :** RNTCP has improved case-finding facilities, made available short-course chemotherapy in uninterrupted manner, increased cure rates, and has provided data on adherence and outcome. To ensure that all patients get adequate treatment, we still need to strengthen our existing management information system and also incorporate private sectors into our system.

Key Words : Directly Observed Treatment Short course (DOTS), Revised National Tuberculosis Control Programme (RNTCP), Tuberculosis (TB).

Introduction :

Tuberculosis remains one of the world's deadliest communicable diseases. In 2013, an estimated 9.0 million people developed TB and 1.5 million people died from the disease.[1] Of these, about 2.2 million cases (25%) occurred in India, making India the world's highest tuberculosis burden country. [2] The emergence of multi-drug resistant (MDR) TB has become a significant health problem. The incidence of MDR-TB in India ranges from 0.6%- 3.2% for initial drug resistance and 6%- 30% for acquired drug resistance. [3] TB and HIV duo form a deadly synergy. The patients with these diseases will have unfavorable outcomes. HIV increases the risk and progression of TB, thereby increasing the risk of death, if not treated timely. Correspondingly, TB is the most common opportunistic infection and cause of mortality among people with HIV, it being difficult to diagnose and treat in this subgroup of patients. [2]

The Revised National Tuberculosis Programme (RNTCP), based on Directly Observed Treatment Short-Course (DOTS) Strategy, was implemented in pilot phase from 1992-1997; and expanded across the country in a phased manner from 1997. Full nation-wide coverage was achieved in March 2006. The strategy under RNTCP emphasizes case- finding by sputum-smear examination and the administration of protocol based standardized short-course therapy under direct observation, during the initial phase. The RNTCP has improved case-finding facilities, made available short-course chemotherapy in uninterrupted manner, increased cure rates, and has provided data on adherence and outcome. [4] DOTS strategy has five main components- political and administrative commitment, quality assured diagnosis through sputum microscopy, uninterrupted supply of quality drugs, directly observed treatment, systematic monitoring and accountability. [5] The National Framework for Joint TB/HIV Collaborative Activities was first developed in 2007

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with the plan to cover the entire country by 2012. [6]

Methodology :

We maintain a database of all patients referred to our Direct Microscopy Center. After the patient is diagnosed have tuberculosis, he is referred by us to his respective regional DOTS center for initiation of Anti-Tuberculosis Therapy (ATT). This is a retrospective study of 1012 patients from our data base maintained at Direct Microscopy Center (DMC), GCS Medical College and Research Center from January 2013 to December 2014.

Results :

During the study period, 1012 patients were referred to the DMC with the clinical suspicion of tuberculosis. Out of these 1012 patients, 345 patients were diagnosed to have tuberculosis. Of the 345 diagnosed patients, 217 were male patients and 128 were female patients. We had 339 newly diagnosed adult patients and only 6 newly diagnosed paediatric patients (age up to 14 years) (table 1). Thus the incidence of childhood tuberculosis at our center was 1.73%.

Table 1: Age wise distribution of TB patients

Age Group	No. of Patients	Incidence (%)
Paediatric (up to 14 years)	6	1.73
Adult	339	98.27
Total	345	100

Of the total patients diagnosed with tuberculosis, 206 patients had pulmonary TB (145 had Pulmonary Smear Positive TB on Sputum Microscopy and 61 had Pulmonary Smear Negative TB). Pulmonary Smear Negative cases were diagnosed on the basis of clinical symptoms of cough, sputum production, low grade fever and X ray chest opacities consistent with tuberculosis, when other possible diagnoses were ruled out. Thus, in our study, the rate of sputum positivity amongst Pulmonary TB patients was 70.38% (Table 2) and the incidence of sputum positive Pulmonary TB amongst suspected cases was 14.32%

Table 2 : Rate of Sputum Smear Positivity in Pulmonary TB patients (N=206)

Status of Patients	No. of Patients	Incidence (%)
Sputum Smear Positive	145	70.38
Sputum Smear Negative	61	29.62
Total	206	100

Of total studied patients, 206 (59.71%) had Pulmonary tuberculosis and Extra-Pulmonary TB was present in 139 (40.29%) patients. The sites for Extra-Pulmonary TB were as given in table 3.

Table 3 : Sites for Extra- Pulmonary Tuberculosis

Site	No. of Patients	Incidence (%)
Pleural Effusion	55	39.57
Lymphadenopathy	44	31.65
Abdominal TB	18	12.95
Bone TB	11	7.91
CNS TB	03	2.16
Others (skin, eye, genitourinary)	08	5.76
Total	139	100

All patients who were diagnosed with tuberculosis were referred to the respective TB unit for initiation of (Anti Tuberculous Treatment) ATT. Fate of Pulmonary TB patients (206) referred to the respective DOTS center is as given in Table 4.

Table 4 : Fate of Pulmonary TB patients referred to DOTS center

Category	Number
Started Cat I DOTS	112
Started Cat II DOTS	63
Started Cat IV DOTS	05
Started ATT from private sector	07
Started Non-DOTS from DOTS center	02
Died before initiating DOTS	02
Refused ATT	06
Patients Lost	09
Total	**206**

Fate of Extra-Pulmonary TB patients (139) referred to the respective DOTS center is as given in Table 5.

Table 5 : Fate of Extra- Pulmonary TB patients referred to DOTS center

Category	Number
Started Cat I DOTS	105
Started Cat II DOTS	32
Started ATT from private sector	01
Refused ATT	01
Total	**139**

Thus, total 317 patients of the 345 diagnosed patients initiated ATT from DOTS centers as per RNTCP guidelines (Table 6, 7).

Table 6 : Patients enrolled in RNTCP (n= 317, 91.88%)

Category	No. of patients initiating ATT
Patients on Cat I	217
Patients on Cat II	95
Patients on Cat IV	05
Total	317

Table 7 : Patients not enrolled in RNTCP (n=28, 8.11%)

Category	Fate	Number
Sputum positive pulmonary TB (n=24)	ATT from private sector	7
	Refused ATT	6
	Died	2
	Patients Lost	7
	Patients on Non- DOTS	2
Sputum negative pulmonary TB (n=2)	Patients Lost	2
Extrapulmonary TB (n=2)	ATT from private sector	1
	Refused ATT	1

Discussion :

We diagnosed 345 patients with tuberculosis during the study period. In our study, 14.32% of TB suspects were diagnosed to have sputum smear positive TB which is as per the standards recommended by the Central TB Division under RNTCP. [7] American Thoracic Society and Centers for Disease Control and Prevention states that, though direct sputum smear microcopy remains a fundamental tool of diagnosis, but may be negative in up to 50% cases of active pulmonary TB. [8] However, in our study the rate of sputum positivity amongst Pulmonary TB patients was 70.38%. This reflects the high quality sputum microscopy at our DMC. Among new TB cases, 1.73% of patients were in pediatric age-group (0-14 yrs). The reported incidence of childhood TB in India is 5% of all new cases. [9] Thus, we have less number of paediatric TB cases referred to our center.

The percentage of EPTB (Extra-pulmonary TB) in tertiary care centers in India is 30-50%, while the percentage estimated by the national control programme in India for HIV negative adults is between 15-20%. [10] In our study, the incidence of EPTB was 40.29%. We found that pleural TB was the commonest type of EPTB (n=55, 39.56%), followed by lymph node TB (n=44, 31.65%), abdominal TB (n=18, 12.94%), bone TB (n=11, 7.91%) and CNS TB (n=03, 2.15%). [11] All patients diagnosed (n=345) with tuberculosis were referred to their respective DOTS center. Of these, 317 patients were enrolled under RNTCP and were initiated ATT as per WHO guidelines. [12] The health care workers ensured treatment regularity for all the patients enrolled under RNTCP. However, 28 patients (8.11%) were not enrolled under RNTCP. Of these 28 patients, 24 patients were sputum positive pulmonary TB patients. These patients are "infective" or "open" cases of TB. They are sources of infection to the community. To ensure that all patients get adequate treatment, we need to strengthen our existing management information system and also incorporate private sectors into our system. Nikshay, a case based, web enabled system for recording and reporting of TB cases has been developed by Department of IT, Ministry of Communication and Information Technology, Government of India, in collaboration with RNTCP, to enable better surveillance and tracking of all TB cases including those in private sectors. [13]

In recommendation, it will be beneficial to have the aim at actual implementation level, to diagnose maximum number of tuberculosis patients by sputum microscopy; and to ensure regular treatment and follow-up of these patients under RNTCP, along with inclusion of the private sector into the existing system.

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