A Prospective Study of Evaluation of Tuberculosis Cases at Tertiary Care Teaching Hospital, Bangalore

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Abstract:

Tubercular infection caused by air borne bacteria mycobacterium tuberculosis and is a growing health problem in the developing world. India accounts for one-fifth of the global TB incident cases, each year nearly two million people in India develop tuberculosis, nearly 2.2 million people develop tuberculosis and about 3.5 lakh die every year. The prosspective study of evaluation of tubercular cases carried out at KIMS hospital and research centre, a tertiary care teaching hospital, Bangalore. For a period of two years, which includes 120 diagnosed tubercular cases. Out of 120 patients diagnosed, the male to female ratio is 2.5:1, and 29 are from age group of 40 to 49 years. Pulmonary tuberculosis cases were more i.e. 85 (75.83%) when compared to extra pulmonary i.e. 35 (29.17%), new smear positive cases were 62 (51.67%) and new smear negative cases were 58 (48.33%). Total 67 (55.83%) patients were categorized in CAT-I, 25 (20.83%) patients in CAT-II and 28 (23.33%) in CAT-III.

INTRODUCTION:

Mycobacterium tuberculosis remains the leading infective cause of mortality and morbidity every year about 8 million people develop tuberculosis worldwide[1].Of these, 95% occurs in developing countries. India accounts for about 20% of the global burden. Nearly 2.2 million people develop tuberculosis and about 3.5 lakh die every year[2]. The National Tuberculosis Control Programme (NTP) was implemented in 1962. However, when reviewed in 1992, after three decades of implementation, the NTP was shown to have made no epidemiological impact, mainly due to poor case finding and low treatment completion rates, as a result the Government of India developed the Revised National Tuberculosis Control Programme (RNTCP) in 1993 based on the internationally recommended Directly Observed Treatment – Short course (DOTS) strategy[3,4].

The studies reveals that most of the patients admitted to the hospital are middle aged males. Pulmonary tuberculosis is the most common form of TB (more than 85% of all tubercular cases) while Extra-pulmonary tuberculosis can affect almost any organ in the body. The prevalence of infection in India according to world health organization accounts 30% and recommends DOTS (Directly Observed Treatment Short Course) therapy and is most important breakthrough of the decade in terms of lives saved. The W.H.O. recommended DOTS strategy was covered in the entire India by 24th March 2006[3,5].The past decade has seen a rapid expansion of directly observed treatment, short-course (DOTS) centers throughout India, under the guidance of the Revised National Tuberculosis Control Programme (RNTCP)[2,6]. Continued success of the programme, however, remains a daunting task as there has been very little co-ordination between the RNTCP, faculties of medical schools and health providers in the private sector. In medical schools, training on TB and HIV/AIDS does not focus on the public health aspects relating to prevention and control of these diseases[7].

Pulmonary Tuberculosis (PTB):

The essential basis of diagnosis of pulmonary tuberculosis was three sputum smear examinations for M. tuberculosis (two spot and one early morning sample) according to RNTCP guidelines.

Extra pulmonary Tuberculosis (EPTB): Diagnosed by the following criteria: (I) constitutional and organ specific clinical features depending upon the site of TB; (ii) radiographic features suggestive of TB; (iii) microbiological and /or histopathological diagnosis depending on the site (not an essential criteria for meditational lymph nodes and pleural effusion) and (iv) a satisfactory response to anti-tuberculosis treatment..

Categorization of Patients:

Patients were categorized into various treatment categories as per the RNTCP guidelines. Briefly, new sputum smear positive and seriously ill sputum smear negative pulmonary TB and extra pulmonary TB patients (Category I) were treated during intensive phase with four drugs: ionized (H), rifampicin (R), pyrazinamide (Z) and ethambutol (E) for two months followed by continuation phase of four months of two drugs, H and R. New sputum smear negative pulmonary TB and not seriously ill extra pulmonary TB patients (category III) were treated during the intensive phase with three drugs, H,R,Z for two months followed by continuation phase of four months of two drugs, H and R. Previously treated patients (category II) were treated during the intensive phase with five drugs H,R,Z,E and streptomycin (S) of initial two months and one month with four drugs as previously mentioned except S, followed by the continuation phase of five months with H, R and E. Smear positive patients whose smear was positive at the end of intensive phase received another month of intensive phase treatment. During the intensive phase every dose was given thrice weekly on alternate days under direct observation. Medications for continuation phase were packaged into weekly blister pack, the first dose of which was given under direct observation. The empty blister pack was returned the following weeks as evidence that the patient had taken the medicines[4,7].

Objectives: the aim of the study is to evaluate the tubercular cases and drugs used in case of smear positive cases.

Experimental methods: This is a prospective study carried out in the tertiary care teaching hospital, India. KIMS hospital and research centre is a 1200 bedded tertiary care teaching hospital. RNTCP being a part of KIMS hospital, the patients diagnosed with tuberculosis are referred to the DOTS clinic where they are registered and treated according to RNTCP guidelines.

Data collection: A total of 120 TB patients registered in the DOTS clinic who met study criteria were included in the study. Patients registration numbers were used to obtain corresponding files from the medical records department. From each medical case file, the patient's history, physical findings, chest radiographs and reports of laboratory investigations were reviewed to obtain the necessary information about diagnosis of tuberculosis. The patients were divided into EPTB and PTB groups. The two groups were compared in respect to age, sex, and into case categories (new case or previously treated case). The new smear positive and smear negative cases were recorded in the suitable tabular form.

RESULTS AND DISCUSSION:

Out of 120 patients diagnosed, the male to female ratio is 2.5:1, and 29 are from age group of 40 to 49 years were more. Pulmonary tuberculosis cases were more i.e. 85 (75.83%) when compared to extra pulmonary i.e. 35 (29.17%), new smear positive cases were 62 (51.67%) and new smear negative cases were 58 (48.33%). Total 67 (55.83%) patients were categorized in CAT-I, 25 (20.83%) patients in CAT-II and 28 (23.33%) in CAT-III.

Table-I: Age and Sex distribution of tuberculosis patients.

Age (years)	Total no of patients diagnosed	
	Male	Female
0 – 9	05	03
10 - 19	02	02
20 - 29	10	03
30 - 39	17	08
40 - 49	20	09
50 - 59	13	06
60 - 69	14	02
70 - 79	05	01
	86(71.66%)	34(28.33%)
Grand total	120	

The 71.66% males were diagnosed as tuberculosis and 28.33% females. The age group of 40-49 years accounts more i.e. 29(24.16%) out of this 20 male and 09 female population respectively as compared to other decades of age and sex group. Also there were many patients diagnosed in the age group between 30-70 years.

Table –II: Pulmonary and Extrapulmonary TB

Age (years)	Total number of diagnosed TB		Pulmonary TB		Extra pulmonary TB	
	Male	Female	Male	Female	Male	Female
0 – 9	05	03	03	02	02	01
10 – 19	02	02	02	01	00	01
20 – 29	10	03	05	03	05	00
30 – 39	17	08	14	06	03	02
40 – 49	20	09	14	03	06	06
50 – 59	13	06	13	02	00	04
60 – 69	14	02	11	02	03	00
70 – 79	05	01	04	00	01	01
Total	86	34	66	19	20	15

The most cases found out were the pulmonary TB cases with 85 (70.83%) and extra pulmonary cases being 35 (29.17%). The pulmonary TB with age group of 30 -39 being more i.e. 20 (23.5%) and extrapulmonary TB with the age group of 40 to 49 with 12 (34.29%) cases.

Table-I11: Category wise distribution of TB patients

Categorization	CAT-I		CAT-II		CAT-III		Total
	Male	Female	Male	Female	Male	Female	
Total diagnosed	53	14	20	05	13	15	120

67(55.83%) patients accounts category I, 25(20.83%) patients were in category II and 28(23.33%) patients are in category III. Majority of seriously ill patients were placed in Category I.

Table-IV   Drugs used to treat tubercular patients

Drugs category	Name of the drugs	% of use
I line drugs	isoniazid, rifampicin, ethambutol, pyrazinamide and streptomycin	86
II line drugs	ofloxacin, levofloxacin, oxifloxacin, ciprofloxacin, amikacin,ethionamide and P-aminosalicylic acid	14

The utilization of I line tubercular drugs accounts 86% of allthe age groups and II line category drugs used 14% used majority in elderly patients.

Out of 120 cases diagnosed, Category –I patients were 67 (55.83%) which include new smear positive, new smear negative and extra pulmonary cases. The age group between 30 to 70 is predominant with tuberculosis where the patients between age of 40 to 49 being more in number with 29 (24.16%) and pulmonary TB between 30 -39 age i.e. 20 (23.5%) and extrapulmonary tuberculosis with 40 to 49 age i.e. 12 (34.29%) cases.

The patients whose smear was examined for TB showed the results with both 'smear positive' and 'smear negative'. But, for 'smear negative' patients empirical treatment with anti-tubercular drugs given. As the diagnosed patients did not stay in the centre until the treatment completion, such patients were put on DOTS and referred to NTCP centre for the treatment completion. There is a variation in the cases diagnosed at the centre due to poor health literacy among the population where most of the people are illiterate, even some of the patients gave wrong address or some have shifted from the previous residing area.

Conclusion: The study revealed that RNTCP/DOTS regimens were found to be effective to diagnose and treat even the complicated cases of tuberculosis, the second line drugs were used in case of elderly patients.

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