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A study on clinical presentation of MDR-TB and Its treatment pattern

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Abstract

There are several reports that many co morbidities can both accelerate TB disease and complicate TB treatment. It is therefore important to identify these co morbidities in people diagnosed with TB in order to ensure early diagnosis and improve co-management. When these conditions are highly prevalent in the general populations they can be important contributors to the TB burden. The research students attended ward rounds on a daily basis and collected the cases which are mentioned under the inclusion criteria. All the required parameters were analyzed thoroughly and data was pooled and analyzed. Identified adverse drug reactions and drug interactions were reported to the consultant physician on time and on daily basis. Among 250 patients, majority 182(72.8%) of the patients were found to be without any comorbidities & 68(27.2%) were with co morbidities. Patients with co morbidities were 68, out of which male patients 62(91.2%) were more in number compared to female patients 6(8.82%). There were 55 (80.88%) DM patients followed by COPD-7 (10.29%) and HIV-6 (8.83%).

Keywords: MDR-TB, DM, Co Morbidities

Introduction

Tuberculosis is an infectious disease caused by Mycobacterium Tuberculosis and the most common site of infection is the lungs. Active disease is characterized by chills, fever, night sweats, weight loss and changes on chest radiography. It is transmitted through air by aerosolized droplet nuclei therefore it is contagious[1,2].

There are several reports that many co morbidities can both accelerate TB disease and complicate TB treatment. It is therefore important to identify these co morbidities in people diagnosed with TB in order to ensure early diagnosis and improve co-management. When these conditions are highly prevalent in the general populations they can be important contributors to the TB burden. However, whether any co morbidities present any additional risk for development or acquisition of MDR TB remains controversial[3, 4].

The association of TB and other co morbidities at the study site has not been studied yet still. Keeping this as background the present study “A comparative study on incidence of TB among patients with co morbidities and without co morbidities and the impact of clinical pharmacist intervention on both groups” is initiated.

Methodology

Study design

Hospital based Prospective observational study.

Inclusion criteria

All Inpatients who are confirmed with TB with and without co morbidities.
All In Patients of both genders above 18 years of age.

Exclusion criteria

Pregnant and breast feeding women.
Patients who are not willing to participate in the study.

Sources of data

Case sheets of patients.
Personal interview with patients.
Personal interview with consultant.

Study procedure

The research students attended ward rounds on a daily basis and collected the cases which are mentioned under the inclusion criteria. All the required parameters were analysed thoroughly and data was pooled and analysed. Identified adverse drug reactions and drug interactions were reported to the consultant physician on time and on daily basis.

Statistical analysis

Suitable statistical method was applied based on the results.

Results

Table 1: Distribution of Patients Base on Age

S. No.	Age Interval(Years)	Number of Patients	Percentage (%)
1.	18-27	32	12.8
2.	28-37	57	22.8
3.	38-47	73	29.2
4.	48-57	48	19.2
5.	58-67	28	11.2
6.	68 and above	12	4.8
	Total	250	100

Table 2: Distribution of Patients Based on Risk Factor

S.No.	Risk Factor	Number of Patients	Percentage(%)
1.	Smoker	40	16
2.	Alcoholic	23	9.2
3.	Alcoholic and smoker	61	24.4
4.	Chewing tobacco	4	1.6
5.	Nil	122	48.8
	Total	250	100

Table 3: Distribution of Patients Based on BMI

S. No.	BMI	Number of Patients	Percentage(%)
1.	Underweight(<18.5)	164	65.6
2.	Healthy(18.5-24.9)	85	34

3.	Overweight(25-29.9)	1	0.4
4.	Obese(>30)	Nil	0
	Total	250	100

Table 4: Distribution of Patients Based on Comorbidities

S.No.	Comorbidities	Number of Patients	Percentage(%)
1	Patients with comorbidities	68	27.2
2	Patients without comorbidities	182	72.8
	Total	250	100

Table 5: Distribution of Patients Based on Clinical Presentation

S.No.	Clinical Presentation	Number of Patients	Percentage(%)
1.	Cough	13	5.2
2.	Cough, fever and breathlessness	180	72
3.	Cough and hemoptysis	23	9.2
4.	Cough and weight loss	2	0.8
5.	Fever, cough, breathlessness and hemoptysis	8	3.2
6.	Cough, fever, weight loss and chest pain	15	6
7.	Chest pain and tiredness	9	3.6
	Total	250	100

Table 6: Drugs Used in Treatment of COPD

S.No.	Treatment	Number of Drugs	Percentage (%)
1.	Bronchodilators	2	18.18
2.	Antimicrobials	4	36.36
3.	Steroids	2	18.18
4.	Cough syrup	1	9.09
5.	Mucolytic agents	2	18.18
	Total	11	100

Table 7: Distribution of Pattern of Treatment in Newly Diagnosed Patients

S.No.	Treatment Categories	Number of Patients	Percentage(%)
1	New cases	82	97.62
2	Previously treated cases	2	2.38
	Total	84	100

Table 8: Distribution of Pattern of Treatment inKnown Case Patients

S.No.	Treatment categories	Number of patients	Percentage(%)
1.	New cases	19	11.43
2.	Previously treated cases	98	59.05
3.	Retreatment cases	21	12.65
4.	Switched from retreatment to drug resistant cases	28	16.87
	Total	166	100

Table 9: Distribution of Patients Based on ADR Observed

S.No.	Adverse Drug Reactions	Number of Patients	Percentage(%)
1.	Patients with ADR	77	30.8
2.	Patients without ADR	173	69.2
	Total	250	100

Discussion

Among 250 patients, more were in the age group of 38-47 years 73(29.2%) followed by age group of 28-37 years 57(22.8%) and the least age group was of 48-57 years 48(19.2%).

The risk factor of patients is an important parameter to be considered. Majority of the patients had smoking and alcohol consumption as the common risk factor. Our study results were found to be similar to the study carried out by JurgenRehm*et al*.[5]

There is a strong association between TB & BMI especially with pulmonary TB, indicating that low BMI may in a way predispose to TB reactivation in lungs. Therefore, this parameter was taken into consideration. As it was established, majority of them were underweight 164(65.6%) followed by healthy BMI. Our result was similar to the study conducted by Esha AR *et al*. [6]

Among 250 patients, majority 182(72.8%) of the patients were found to be without any comorbidities & 68(27.2%) were with co morbidities. Patients with co morbidities were 68, out of which male patients 62(91.2%) were more in number compared to female patients 6(8.82%). There were 55 (80.88%) DM patients followed by COPD-7 (10.29%) and HIV-6 (8.83%)

Among the 7 COPD patients, the choice of drugs were Bronchodilators and corticosteroids, followed by antimicrobials and mucolytic agents. The 6 HIV patients were treated with ART therapy followed by Co-trimoxazole as a prophylactic agent to avoid opportunistic infections. Out of 55 Diabetic patients, Insulin was given for majority of them followed by Metformin.

Hospitalization is one of the most costly health system component of tuberculosis control programme. It was observed that majority of the patients had a length of stay for a period of 10-18 days followed by 3-9days.Our result was found to be similar to the study carried out by Z.Taylor *et al*. where their results showed that the length of stay of patients varied between 9-17 days. The results were also similar to the retrospective cohort study carried out by Ronald LA *et al*. where their length of stay was around 13-17.5 days [7].

Among the patients with MDR TB, it was observed that majority of the patients had a length of stay for a period of 10-18 days followed by 3-9 days.

Subjective evidence of the patients gives the clarity about the stage of the disease. In view to this, the clinical presentation of the disease was considered as per RNTCP. In our study, majority of the patients had cough with fever and breathlessness as the most common symptoms. Our results were similar to the study conducted by Loren J Miller and Y Ismail *et al*.[8]

It is very difficult to diagnose TB only by a person's symptoms on their own. This is because there are many other diseases which resemble the symptoms. A diagnosis is usually only certain when there is definite evidence of TB bacteria. Tests for diagnosis include TB skin test, sputum microscopy, X-ray, the culture test as well as the new Genexpert test. Major problems with the older tests are the lack of accuracy as well as the time they take. With newer tests a major issue is the cost. In our study, the confirmation was done based on radiography followed by sputum examination: AFB positive and then based on their clinical diagnosis.

Patient will be in one of three groups based on their history of TB treatment. These groups are:

a) **New TB patients:** These are TB patients who never had treatment for TB or they have taken anti TB drugs for less than one month.
b) **Previously treated patients:** These are patients who have received one month or more of anti TB drugs in the past.

Recurrent TB patients are patients who have previously been considered as successfully treated (cured/treatment completed) and they have subsequently been microbiologically confirmed as still having TB.

Treatment after failure patients are those who have previously been treated for TB and their treatment failed at the end of their most recent course of treatment. Treatment after lost to follow-up is a TB patient who has previously received TB treatment for a month or more and they were declared lost to follow up in their most recent course of treatment. They have also subsequently been found to be a microbiologically confirmed TB case. Other previously treated patients were patients who have previously been treated but whose outcome after their most recent course of treatment is unknown or undocumented. Among 250 Inpatients majority of them were known case of TB and the reason for re-occurrence or failure of treatment was not known.

As we know that despite good progress made in the fight against tuberculosis (TB), the disease remains a major public health threat worldwide. Comorbid diseases that increase the risk of developing active TB and have a negative impact on final treatment outcomes include HIV and DM. The effect of other conditions such as peptic ulcer and asthma/chronic obstructive pulmonary disease on TB is not clear[8].

Conclusion

Among the study population, majority of them were newly diagnosed TB patients. Irrespective of the type of TB, chest radiography has been performed for all. Pulmonary TB was the most common type of TB observed in the study subjects.

It was observed that only one fifth of the TB patients had MDR TB. It was noticed that half of the HIV positive people developed MDR TB. The newly diagnosed TB patients were started with CAT 1 category wherein the MDR TB patients were started with CAT 4 and CAT 5 as it is very clear that they are resistant to the rest category drugs.

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