ORIGINAL RESEARCH

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Retrospective Analysis of Patients Taking Anti-Koch's Treatment (AKT) in Incidence of Tuberculosis in the Urban Population of South Gujarat

Shivangi Patel[1], Pawan Toshniwal[2]

1. Zydus Medical College and Hospital, Dahod, Gujarat;
2. Department of Biochemistry, Shri M P Shah Government Medical College, Jamnagar*

ABSTRACT

Background: Tuberculosis (TB) continues to be a serious worldwide health issue, necessitating immediate effort to manage and eventually eradicate the disease. The current burden of TB in India is as high as that of more than 25% of all patients present globally are found in India, which means that it is double the amount of patients that are present in any other country. This makes India the most important focal point for any TB control Strategy and Gujarat is the state that has the most number of patients thus it is the representative of the TB both in terms of incidences as well as prevalence.

Aims and Objectives: To Study the incidence of tuberculosis in the urban area of South Gujarat and also identify the reasons for discontinuation of anti-Koch's treatment (AKT).

Material and Methods: A retrospective and observational study was carried out in a South Gujarat tertiary care hospital. 500 patients suffering from pulmonary and extrapulmonary tuberculosis were recorded. The data were collected from the medical record department from 1st August 2018 to 31st July 2019 at a tertiary care health centre in South Gujarat. The ethics committee's approval was taken before the start of the study. The data collected was analyzed in Microsoft Excel and the frequency of incidence and their percentages were calculated.

Results: In this study, it was observed that the majority of the affected patients, around 74%, lie within the age group of 21-30 years. Various forms of extrapulmonary tuberculosis have been included of which pleural effusion, tuberculosis lymphadenitis, abdominal tuberculosis were more prevalent. The reasons for the default of the patients as observed in this study were migration for work, AKT-induced side effects, feeling better, other medical conditions, and no improvement.

Conclusion: Most susceptible age group for developing tuberculosis is from 21-30 and males are seen to be more affected than females, so the default rate was also more in males as compared to females. Migration for work was the main reason among the defaulters. The incidence of pulmonary tuberculosis incidence was highest compared to the other types of tuberculosis. The second highest incidence of TB was of tubercular lymphadenitis with males and females having an almost equal percentage of Drug Resistant TB cases (MDR TB) was also recorded in some patients.

Keywords: Tuberculosis, Extrapulmonary tuberculosis, Multidrug-resistant tuberculosis (MDR-TB), Anti-Koch's Treatment (AKT).

*See End Note for complete author details

INTRODUCTION

TB is one of the major health issues present globally. TB is one of humanity's oldest diseases, dating back over 17,000 years based on molecular evidence. Despite modern diagnostic and treatment approaches people continue to suffer from TB and it is one of the top ten diseases that are caused by microorganisms in the world only succeeded by HIV. WHO has even called it a worldwide pandemic. It is one of the major causes of mortality among the HIV infected individuals and has been considered as the major public health issue for a long time. India has the largest TB burden with 2.8

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Corresponding author:
Shivangi Patel
3rd year MBBS, Zydus Medical College and Hospital
Dahod, Gujarat
E-mail: pshivu2000@gmail.com

million new cases reported in 2015 out of global total of 10.4 million.[1] The World Health Organization (WHO) calculated this particular incidence of TB based on the prevalence found in Gujarat, where a state-level survey was conducted in 2011–12, assuming that the prevalence in a state with a higher economic development is unlikely to be higher than the national average.[2] Using data from the vital registration system some of the geographical areas have shown as high as 5% of TB cases as MDR TB.[3] Various investigators have conducted a large number of surveys which showed that TB is a highly prevalent disease in India.[4,5]

Non compliance to the Anti TB drugs can result in poor outcomes. One of the ways to tackle this is DOTS therapy where patients are observed while they consume the ATT drugs.[6] Although very cost effective and affordable treatment is available still TB remains to be a very highly prevalent disease with estimated 9 million new cases diagnosed every year.[7] The World Health Organization (WHO) has identified two crucial elements that can hasten this decline: (i) the most effective usage of existing and new devices; and (ii) the introduction of new technologies, such as new treatments and vaccinations, that have the potential to significantly reduce tuberculosis prevalence.[8]

The currently existing tuberculosis treatment has several significant problems. First, the most common being duration and number of drugs required for treatment results in non-adherence to the treatment. This results in failure and relapse, the appearance of resistant cases , and the spread of the disease Second, the increasing ceases of multidrug-resistant (MDR; resistance to at least rifampicin and isoniazid) and extensively drug-resistant (XDR) resistance is major hindrance to control TB globally. Resistant TB cases occur when there is presence of partially suppressive drug concentrations that leads to the replication of bacteria, the formation of mutants, and the growth of wild-type strains.[9]

Most of the failure in TB treatment occurs due to the increased number of defaulters. TB is one of the world's most disastrous public healthcare problems in the twenty-first century. One of the most important indications of a national TB control program's efficacy is to monitor and assess TB treatment results, as well as the monitor and evaluate its risk factors in the Directly Observed Treatment Short Course (DOTS).

The DOTS program that is present in India is one of the world's fastest growing programs in terms of number of patients started on treatment as well as the second biggest in terms of the population that is enrolled in the TB control program. Poor healthcare infrastructure especially in the rural areas of many states, unregulated privatisation, increasing the irrational use of first and second line drugs, and increasing HIV prevalence in TB patients are some of the major Challenges that we are facing right now.

This study was used to find out the incidence of tuberculosis in the urban population of South Gujarat and also identify the reasons for the discontinuation of anti-Koch's treatment (AKT).

MATERIALS AND METHODS

A retrospective and observational study was carried out in a South Gujarat tertiary care hospital. Original data obtained from the hospital was used to fill up the datasheet.

Sample Size: Data of 500 patients suffering from TB was recorded by systemic sampling.

Inclusion criteria:

- The patient suffered from pulmonary and extrapulmonary tuberculosis.
- The patient took treatment for pulmonary and extrapulmonary tuberculosis.

Exclusion criteria:

- Patients having retreatment after default.
- Family having tuberculosis history of the patient.
- Patients addicted to tobacco.

Data collection period: The data were collected from the medical record department from, 1st August 2018 to 31st July 2019 at a tertiary care health center in South Gujarat.

Ethical consideration Institutional: The ethics committee's approval was taken before the start of the study. The Informed written consent form from the parent/ guardian was taken as per the Indian Council of Medical Research (ICMR) human research guidelines before the recruitment of the subjects.

Statistical analysis: The data collected was analyzed in Microsoft Excel and the frequency of incidence and their percentages were calculated.

RESULTS

From all the data gathered and analysis done, we observed more of positive incidence of TB in males compared to females.

According to the results we found, a large percentage (56.2%) of the study subjects suffered from pulmonary tuberculosis (PTB). Out of the total patients suffering from PTB, 197 (70.1%) were male while 84 (29.9%) were female. Similarly, 58 (11.6%) males and 15 (3%) females were affected by pleural effusion tuberculosis. Patients who suffered from abdominal tuberculosis were 23 (4.6%) males

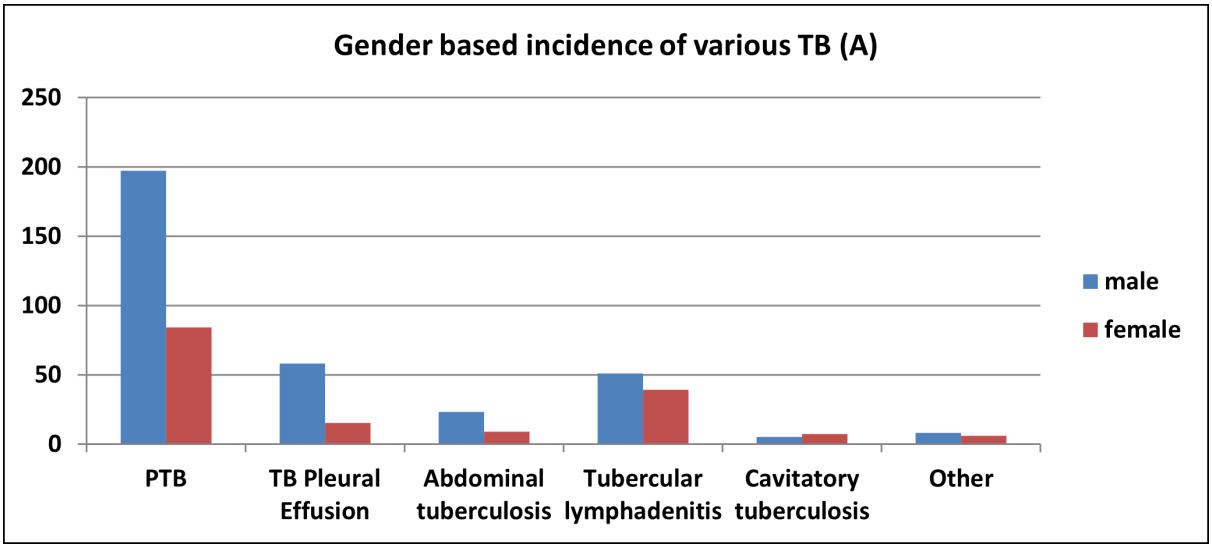


Figure 1(A). Gender based incidence of various TB which are more prevalent

and 9 (1.8%) females whereas patients with tuberculosis lymphadenitis were 51 males (10.2%) and 39 (7.8%) females. Also, 12 patients were diagnosed with cavitating tuberculosis of which 5 were males (1%) and 7 were females (1.4%). The patients with other types of tuberculosis which was not specific were 14 in number with 8 males (1.6%) and 6 females (1.2%) **[Figure 1(A)].**

The patients having miliary and genitourinary TB were 3 in each case, each having 2 males (0.4%) and 1 female (0.2%). Only one patient was observed to have pericardial tuberculosis, 1 male and 1 female had tubercular meningitis whereas 8 males (1.6%) and 2 females (0.4%) had osteoarticular tuberculosis **[Figure 1(B)].**

The sputum examination of 500 patients showed that 139 males (around 28%) and 56 females (around 11%) had a positive report. For many of the extrapulmonary cases, sputum examination was not meant to be done, so the sputum reports of those patients were not available, which included 132 males and 66 females. The CBNAAT (cartridge-based nucleic acid amplification test) examination for patients suffering from TB was not done so the date was not available, but for those patients for whom the examination is done, majority of them had negative report while only a few of them, that is 10 males and 2 females had a positive report **[Figure 2].**

In this study, it was observed that the major reason for defaulting the treatment was the migration for work (37.77% of default patients migrated for work) which included 13 males and 4 females. Very few patients 6 in 500 (4 males, 2 females) had AKT-induced side effects. Only 5 patients who had other medical conditions were defaulters.

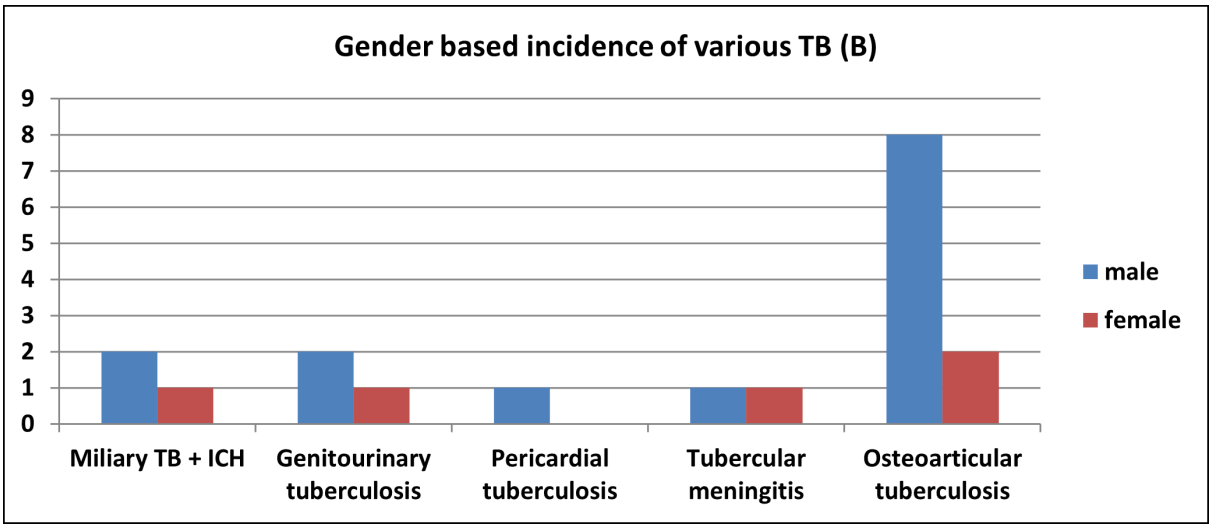
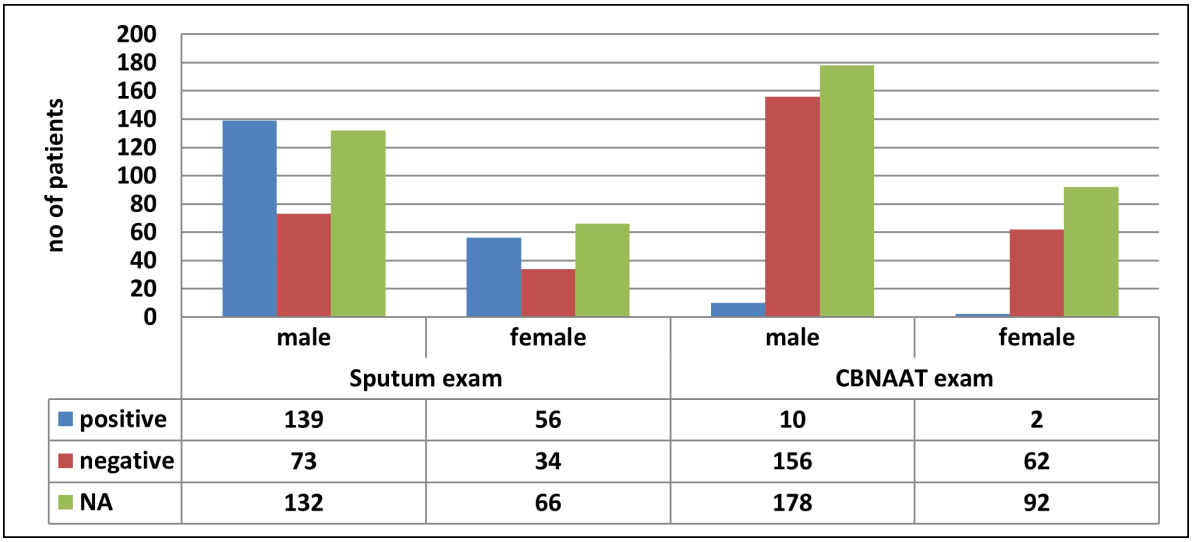


Figure 1(B). Gender based incidence of various TB which are less prevalent



	Sputum exam		CBNAAT exam	
	male	female	male	female
positive	139	56	10	2
negative	73	34	156	62
NA	132	66	178	92

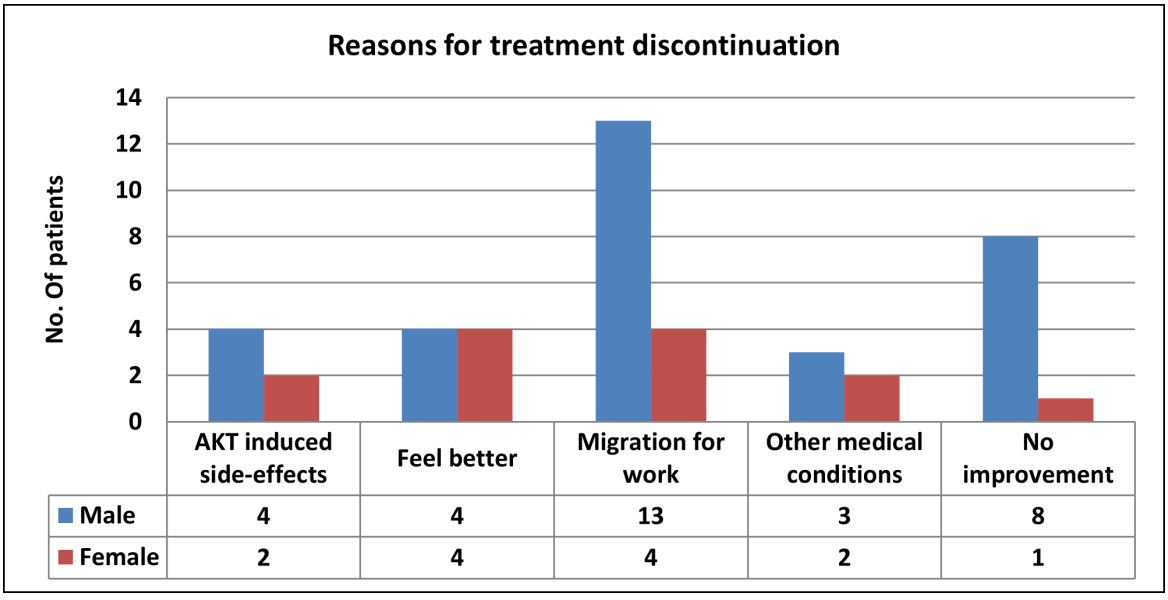
Figure 2. Sputum and CBNAAT examination of TB patients

Discontinuation of treatment was observed in 8 patients, 4 male, and 4 female, the reason behind it was that they were feeling better. Some of the patients felt no improvement so they started medication from private hospitals (8 males, 1 female) **[Figure 3].**

DISCUSSION

In this study, it is observed that the majority of the affected patients, around 74%, lie within the age group of 21-30 years. A similar study done by Shrinath MP also shows that the majority of the study subjects lie in the age of 21-40 and a study by Shringarpure KS et al. showed the age of 35 as the most susceptible age.[10,11] The reason might be due to their workplace, as this age group is the most active and almost the majority of them might be employed. Out of 500 patients, there are 68.8% (344) males while females are 31.2% (156). We also observed that loss to follow-up is more common among males as compared to females, which showed almost similar kind of results as shown by Shringarpure KS et al.[11]

In this study, various forms of extrapulmonary tuberculosis have been included of which pleural effusion, tuberculosis lymphadenitis and abdominal tuberculosis were more prevalent. In a study conducted by Natasha Chida et al., only pulmonary tuberculosis was being taken into consideration which was about 66% while the current study showed the rate of pulmonary tuberculosis to be about 56.2%.[12]



	AKT induced side-effects	Feel better	Migration for work	Other medical conditions	No improvement
Male	4	4	13	3	8
Female	2	4	4	2	1

Figure 3. Number of patients and the reasons for why they have defaulted the treatment

The reasons for the default of the patients as observed in this study were migration for work, AKT-induced side effects, feeling better, other medical conditions, and no improvement. The study done by Natasha Chida et al. found that the major reasons for default were: the cost burden of treating disease, side effects of medicine or drugs and beliefs about TB, health system effects, and the effect of TB diagnosis,[12] while another study conducted by Khushbu Patel et al. mentioned the reasons as migration for work, illiteracy, unskilled labour work, and lower socio-economic class.[13] The majority of the defaulters in our study migrated for work, that is 17 defaulters out of 45 (37.77%). This rate was quite similar to the study conducted by Dr. KN Sheladia wher the rate was about 40%.[14]

CONCLUSION

According to a study done, we concluded that the most susceptible age group for developing tuberculosis is from 21-30 and males are seen to be more affected than females, so the defaulter rate was also more in males as compared to females. Migration for work was the main reason among the defaulters. We also conclude that the number of cases of pulmonary tuberculosis was highest compared to the other types of tuberculosis. The second highest incidence of TB was of tubercular lymphadenitis with males and females having an almost equal percentage of disease. MDR TB was also recorded in few patients. Some of the parameters like education, occupation, HIV, other body fluid examination, chest radiography, dot-related reasons, among others were not used because the data recorded was very less and it does not have any significant effect in comparison to defaulters.

END NOTE

Author Information

1. Shivangi Patel, 3rd Year MBBS Student, Zydus Medical College and Hospital, Dahod, Gujarat
2. Dr. Pawan Toshniwal, Associate Professor, Department of Biochemistry, Shri M P Shah Government Medical College, Jamnagar 361008

Conflict of Interest: None declared

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