



THE FREQUENCY OF TUBERCULOSIS IN JMCH, JORHAT, ASSAM

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ABSTRACT Tuberculosis is a superhero and mega star to “Kill” human and killing, more than millions of human beings every year, across the globe without any social or ethnic boundaries. From its inception, many Central Government and, State Governments multi pronged strategies had been working round the clock, but irrespective all measures it continued to be high in urban as well as rural India. It is the biggest record breaker in human history such bacteria can infect human beings from early Jurassic age till date. **Objective:** To study the incidence of Tuberculosis in Jorhat Medical College & Hospital from Jan2021 to Dec2021. **Setting:** The estimate the incidence, and compare with the prevalence of tuberculosis (TB, Pulmonary & extra pulmonary) among the patients attending in the Deptt.of Pulmonary Medicine, JMCH. **Results:** The incidence of TB was estimated. The study was carried out in the Department of Pulmonary Medicine. Initially OPD patients were examined as routine protocol, primary H/O of present illness, necessary investigation were prescribed. Total number of cases 2659 included in hospital register, out of which 1641 was Male and 1018 numbers were female. Followed up cases from previous year were 537 of which 296 were Male and 241 numbers were Female. The ratio M:F in new cases was 1:1.5 and old case 1:1.2 respectively Medium to severely infected and ill cases and referred cases from district hospitals were admitted as per patients need. **Conclusion:** The changing scenario of RNTCP to NTEP has greatly revolutionized the present indication and treatment protocol and changing the pattern of mortality and morbidity of TB patients with great hope TB will be eliminated from the world 2030 and expecting our country will win the race before 5 yrs of the same. But requires very close observations and eagerly awaiting the outcome.

KEYWORDS : Tuberculosis, drug resistant TB etc.**INTRODUCTION:**

“Early in the beginning of spring, and through the summer, and towards winter, many of those who had been long gradually declining, took to bed with symptoms of phthisis. Many, and in fact, most of them died.” Hippocrates who concluded in his Book 1, Of the Epidemics (410-400 BCE).

From eastern to Western Hemisphere, developed to developing countries, the annual senser is like a pendulum living behind any race, religion, young or the old. Nobody could escape from its life threatening behavior, many of which ultimately succumb to death. In many situation this “Blockbuster” is associated with co-infectious morbid conditions like TB +HIV, TB+DM, TB+Tobacco etc, united together and ultimately increased the rate of mortality and morbidity of host.

March 24th is the World TB day, every year there is a big public awareness message as declared by the Pioneer authority to prevent, control and treating TB. Assam Government is also taking all necessary steps along with Central Govt. for at every level of structural and functional measure to prevent and control of TB from Village, block level to district headquarter levels by distribution of care and support with distribution of free medicine and food etc.

There is enormous therapeutic and treatment protocol has been changed as Central Govt, initiatives, mainly Patient-provider support Agency to mobilize all TB patient for treatment and should have free testing, investigation facilities and to reach ideal treatment as early as possible even in private sector.

The last year annual report was very attractive with sustainable acceleration was seen among the TB patients and many wanted to announce to put a full stop to TB, by declaring “TB Harega Desh Jeetaga”. And “It's Time” etc.

But the real time scenario, as in the battle field, is still suspicious that somewhere, somehow there is a gap and transmission of the TB blockbuster is in full motion, especially drug resistance to mono drug, multi drug or to a total drug resistance creating critical treating behavior in grass root level.

Tuberculosis is as old as the available human history concerned. With the association of pulmonary tuberculosis co-morbidities, especially HIV, Diabetes and Tobacco have been prioritised. Over 94% of People Living with HIV (PLHIV) is being screened in ART centers for TB

symptoms. 2.4 lakh PLHIV were given access to rapid molecular testing via NAAT for TB diagnosis. More than 3 lakh PLHIV were initiated on TB preventive therapy in 2019. As a result of the implementation of TB-Diabetes collaborative framework, over 60% of the notified TB patients in the public sector.

M. tuberculosis the causative agent for producing human Pulmonary tuberculosis a complex microbe that has at least 9 members in his family: M. tuberculosis sensu stricto, M. africanum, M. canetti, M. bovis, M. caprae, M. microti, M. pinnipedii, M. mungi, and M. orygis. It requires oxygen to grow, it is very doubtful thus it produces spores, and is non motile.

M.Tuberculosis is a very smart bacillus, by virtue of its nature, it follows the air borne droplets by inhalation and enter in a new host. Although it strict aerobe, its prefer multiplication sub pleural, (either the upper part of the lower or lower part of the upper ole) where aeration is low and can be examined its brilliant view like a red comma/rod shaped in fine light sky blue background under normal light microscopy.

Mechanism of action:

M. tuberculosis used to produce a variety of DNA-damaging assaults, primarily from host-generated antimicrobial toxic radicals. Continuously exposure to host reactive oxygen species and/or reactive nitrogen species causes different types of DNA damage including oxidation, denaturation, methylation, and deamination that resulted in double-strand breaks (DSBs) in different settings.

DnaE2 polymerase is up regulated in M. tuberculosis by several DNA-damaging agents, as well as during infection of mice.

There are two major pathways to repair of DSBs are, that are homologous re-combitant repair (HR) and non-homologous end joining (NHEJ).

Macrophage that infected with M. tuberculosis is able to persist if either of these pathways is defective, but is attenuated when both pathways are defective.

This indicates that intracellular exposure of M. tuberculosis to reactive oxygen and/or reactive nitrogen species results in the formation of DSBs that are repaired by HR or NHEJ and drama continue for next repeat.

Mechanism of resistant to drugs:

M. tuberculosis is an intra cellular organism and does not exchange

DNA via horizontal gene transfer. In spite of an additionally slow growth rate, the emergence and spread of antibiotic resistance in *M. tuberculosis* poses an increasing threat to global public health.

In 2019, the WHO reported the estimated incidence of antibiotic resistant TB to be 3.4% in new cases, and 18% in previously treated cases.

Geographical discrepancies exist in the incidence rates of drug-resistant TB.

Countries facing the highest rates of drug resistant to TB are China, India, Russia, and South Africa.

Some new trends have revealed an increase in drug-resistant cases in a number of regions, with Papua New Guinea, Singapore, and Australia undergoing significant increases.

DR-TB has been reported since early days of introduction of ATT, but recently MDR-TB has been an area of growing concern and is posing threat to Global effort of TB. Central prevalence of MDR-TB in a community, mirrors of the functional stage and efficacy of TB control programme and the realistic attitude of the community towards implementation of such programme (MDR-TB published by JCMR, 1999:29(10&11)pp(105-14).

Multidrug-resistant Tuberculosis (MDR-TB) is characterized by resistance to at least the two front-line drugs isoniazid and rifampicin. MDR is associated with a relatively poor treatment success rate of 52%. Isoniazid and rifampin resistance are tightly linked, with 78% of the reported rifampin-resistant TB cases in 2019 being resistant to isoniazid as well.

INCLUSION CRITERIA:

All patients of age group more than 18 years presenting with H/O, cough with expectoration, chest pain, wt.loss, evening rise temp. loss of appetite etc. in the department of Pulmonary Medicine, JMCH during the study period.

EXCLUSION CRITERIA:

Inadequate and inconclusive history and patients does not want medication or hospitalizations were excluded.

Material and Methods:

The study was carried out Jorhat Medical College and Hospital, Jorhat from Jan2020 to Dec 2021 and, total number of cases 2659 included in hospital register, out of which 1641 was Male and 1018 numbers were female.

TB patient with cervical lymph adenopathy:

Fine Needle Aspiration Cytology (FNAC) is a very important method for diagnosing cervical lymph node enlargement associated with TB cases. There are many advantages of Fine Needle Aspiration Cytology including as it is an outpatient procedure, easy to do, reliable and cost effective, and there is no risk of anaesthesia.

Core needle biopsy in selected cases of TB:

In some cases Core needle biopsy (CBN) was used for evaluation of both cytological and architectural features to arrived at a definitive diagnosis to roll out metastatic carcinoma if present. Conversely a benign lesion such as follicular/papillary lymph adenopathy can be easily recognized, and core needle biopsy allows for easier sampling and identification of micro architecture of tubercular lymph adenopathy.

In our hospital the introduced 14G-18G core biopsy needle and automated large core biopsy gun improves the diagnostic efficacy and it makes the procedure very easier. But there is also limitation advantage of CNB is that sometimes seeding of malignant cells along the needle tract can occur Excision of neck node was prescribed as and when necessary including cosmetic deformity if at all necessary.

Observation and Results:

The study was carried out, in Pulmonary Medicine, Jorhat Medical College and Hospital, Jorhat from Jan2020 to Dec 2021 and, Out of total 2659,

Cytology report of Lymph node: 40 number cases were sent for Cytology diagnosis

Cytological Findings	Number of Cases	Percentage
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Necrosis	15	47.06
Necrosis+Hemorrhage	10	11.76
Necrosis+presence of AFB	05	8.82
CNB	10	32.36
Total	40	100

Followed up cases from previous year were 537 of which 296 were Male and 241 numbers were Female. The ratio M:F in new cases was 1:1.5 and old case 1:1.2 respectively.

Table: 1 Frequency of Cases:

Frequency of Cases	Male	Female
2659	1641	1018

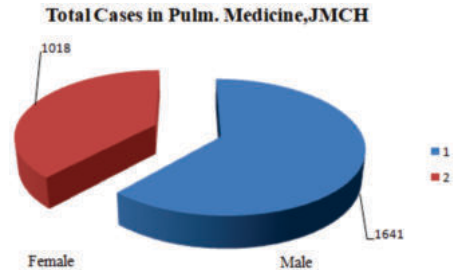


Table No:1 Frequency of Sex distribution

Frequency of Cases	Gender	Percentage
Male	1641	61.71%
Female	1018	38.29%

TABLE 2. Frequency of cases, age distribution: Male

Age (YEARS)	Number of cases	Percentage (%)
≤ 20	140	8.5
21-30	200	12.1
31-40	360	15.8
41-50	440	26.8
51-60	250	15.2
61-70	150	9.1
>71	101	6.1
TOTAL	1641	100

From the above table it can be seen that there is Male preponderance in the age group of 41-50 Yrs. Of age. This is may be due to the fact that most people in the 4-5th decade had to work on high motion, irrespective race concerned to increased the family burden with increased outdoor activity often associated with smoking and drinking habits.

TABLE 2. Frequency of cases, age distribution: Female

Age (YEARS)	Number of cases	Percentage (%)
≤ 20	80	7.85
21-30	140	13.7
31-40	300	29.4
41-50	250	24.7
51-60	120	11.7
61-70	80	7.8
>71	48	4.7
TOTAL	1018	100

From the above table it can be seen that there is female preponderance is high in the age group of 31-40 Yrs. Of age. This is may be due to the fact that most the ladies used to get marry, produce 2/3 children in the 3-4th decade of their life. They had to work hard , irrespective social boundaries. In many families the habits of chewing tobacco, betel nuts with tobacco, drinking of various local, ethnic rice beer, alcohol etc is very common especially in the tea garden communities which further increased risk of lung diseases and TB.

Radiological co-relation of Tuberculosis:

In case of total cases of 1641, most of them had H/O X-ray finding positivity with them and the involvement of lung with most of them sputum positivity and clinical diagnosis.

Ubaidi B A et al found that the rate of radiological sensitivity and specificity of symptoms CXR reaches to 86%, 89% respectively in

most the cases. He also enumerated that three screening tests of TB are symptoms inquiry questionnaire by asking about the existence of prolonged productive cough, haemoptysis, night fever, night sweating, weight loss, and pleuritic chest pain, besides chest x-ray (CXR) and PPD screening test are very much significant to arrived at clinical decision.

DISCUSSION:

The average prevalence of all forms of tuberculosis in India is estimated to be 5.05 per thousand, prevalence of smear-positive cases 2.27 per thousand and average annual incidence of smear-positive cases at 84 per 1,00,000 annually. The credibility and use of the estimates are discussed in detail. Reports on recent studies on the time trend of the disease from some areas in India. ⁽¹⁾the study reflects similarity both incidence and prevalence with our study.

Disease surveys conducted in different parts of the country since the 1950s have reported prevalence of smear-positive pulmonary TB (PTB) of 0.6-7.6 per 1000 population, culture-positive TB of 1.7-9.8 and culture and/or smear-positive TB of 1.8-12.7.

The incidence of smear-positive PTB has been observed in the range of 1.0-1.6/1000 and that of culture-positive PTB 1.0-2.5/1000 in the limited number of studies carried out. The annual risk of tuberculosis infection (ARTI) had been estimated at 1-2% for most of the tuberculin surveys carried out in different areas over different time periods. During a nationwide study in 2000-2003, the average ARTI in the country was estimated at 1.5%. ⁽²⁾all these were reports correspond to our study.

Another study conducted in south India showed the incidence of TB was estimated to be 82 and prevalence 210 per 100,000 populations and ARTI 1.6%. We estimated that 1% ARTI corresponded to 51 new and 131 prevalent cases. ⁽³⁾the said study corresponds to pattern of study.

The prevalence of culture-positive and smear-positive tuberculosis was respectively 605 and 323/100,000. Both increased appreciably with age, and were substantially higher in males than in females at all ages; the overall male: female ratio was 5.5 for culture-positive and 6.5 for smear-positive tuberculosis. ⁽⁴⁾

Community-based cross-sectional studies conducted among population aged 15 years and above were included. Summary estimates, were calculated using random effects models. The pooled prevalence of bacteriologically positive pulmonary tuberculosis was 295.9 (95% confidence interval: 201.1-390.6) per 100,000 population. The prevalence was higher among males than females and in rural areas compared to urban areas. ⁽⁵⁾ The study correlates with our findings.

CONCLUSION:

Cases compatible with FNAC, CNB provides the more accurate and optimal diagnostic information, combined with clinical examination as it is possible to differentiate various neck glands swelling with involvement of Pulmonary Tuberculosis is a very common feature, alongwith sputum for AFB and radiological findings.

Clinical finding still said to be the gold standard along with smear for sputum cytology for Acid fast Bacillus and Chest X-ray, either double or triple methodology which can be done on the same day in our hospital for early diagnosis and treatment protocol.

Another, one of the most suitable methods is the availability of automated large core biopsy gun with 14/18 G core biopsy needle make the procedure easier and improves the diagnostic yield for cervical swelling and neck gland pathology for superior category of investigation which is also available in our hospital.

Radiological examination PA view chest is very common and free of cost investigation for large number patients both in APL/BPL categories as part of National TB elimination programme who wants to avail.

In some special cases HRCT thorax was done that was consistent with the clinico-pathological co-relation and deserved special mention.

Intensive mono drug, multidrug regimes as prescribed the State authority is helpful for the patient is in need. Now with the distribution nutritious food along with medicine is carried out along Govt. centers

as well as various NGOs.

Government of India (GoI) developed the National Strategy Plan to eliminate TB from India by 2025. GoI doubled the annual budget from 2015-16 to 2017-18. Out of 3,029,164 TB patients, 1,961,104 notified TB patients receiving the benefits of the Direct Benefit Transfer scheme of GoI as on June 30, 2019. (Source GOI-2019)

As per Govt. report laboratory facility, drug management toolkit. Also patient support system toolkits, E-training Module for Paediatric initiative, were developed indigenously.

At last multi-prong National Level strategy is necessary for the TB patients through their existing programs/schemes and contribute towards ending TB in India by raising awareness about TB treatment and promoting TB prevention measures, providing TB patients with quality care, socio-economic support and to adopt TB friendly workplace, policies that is to Govern and cover both urban and rural population by large to put a full stop of TB.

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Authors Contribution:

This is a departmental work-up among the authors.

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