

MILIARY TUBERCULOSIS: A DESCRIPTIVE STUDY IN WEST GUJARAT

Purohit CS¹; Kaplesh Patel²; Parth Patel²

¹ Faculty Residence, GAIMS Campus, General Hospital, Bhuj, Gujarat

² PG Hostel, GAIMS, GK General Hospital, Bhuj, Gujarat

DOI: <http://doi.org/10.3126/saarctb.v19i1.39951>

Received: 5th February

Accepted: 2nd March

Published: 30th July

This article is available at: <https://www.saarctb.org/stac-journal-2021/>

ABSTRACT

Introduction: Almost 10 million patients suffer from tuberculosis all over the world. Military tuberculosis accounts for hardly 1-2 % of total tuberculosis cases but is usually fatal if left untreated. With global epidemic of human immunodeficiency virus (HIV) infection chances of developing tuberculosis disease has also increased. In last few decades MTB has shifted to young adults and elderly who are the most productive members of the society.

Fifteen adults were diagnosed to have military tuberculosis during last one year and their data were analysed. Persons living with HIV(PLHIV) accounted for 46% of all cases of military TB. Twelve out of 15 were males. None had meningeal involvement. There was no mortality during hospital stay or follow up till date.

High index of suspicion in classical clinical settings and early institution of anti-TB treatment can save lives of patients. Sputum for CBNAAT is very helpful in reaching the diagnosis.

Key Words: Military tuberculosis, HIV, CBNAAT, HRCT, Choroid tubercle

INTRODUCTION

Tuberculosis (TB) has existed for millennia and remains a major global health problem. It causes ill-health for approximately 10 million people each year and is one of the top ten causes of death worldwide. For the past 5 years, it has been the leading cause of death from a single infectious agent, ranking above HIV/AIDS (WHO). One-third of the world population is estimated to be infected with *Mycobacterium tuberculosis* (latent TB infection) and 10% of these individuals will develop active TB in their lifetime ⁽¹⁾.

Military TB is a fatal form of disseminated TB that results from a massive lymphohematogeneous dissemination from a *Mycobacterium tuberculosis* laden focus⁽³⁾. Radiologically, the military pattern has been defined as “a collection of tiny discrete pulmonary opacities that are generally uniform in size and widespread in distribution, each of which measures 2 mm or less in diameter” ⁽⁴⁾.

In various clinical studies among immunocompetent adults, military TB accounts for less than 2% of all cases of TB and up to 20% of all extra-pulmonary TB (EPTB) cases ⁽⁵⁾. In late HIV infection, EPTB accounts for more than 50% of all cases of TB and military TB is more frequently encountered. Before the advent of anti-TB treatment, military TB was predominantly seen in infants and children ⁽⁶⁾. But after 1980s a changing epidemiological trend has been observed and military TB is increasingly diagnosed in adults also. Two peaks are evident, one involving adolescents, young adults and

Correspondence:

Dr. C.S. Purohit

Associate Professor

PG Hostel, GAIMS

G K Central Hospital

Bhuj, Gujarat, India

Email: papurv1988@yahoo.co.uk

another later in life among elderly individuals⁽⁷⁾. Miliary, or disseminated, tuberculosis occurs with greater frequency among aging patients; many cases are detected only at autopsy⁽⁸⁾. In both pediatric as well as adult patients, male gender is more frequently affected by military TB⁽²⁾.

On physical examination, choroidal tubercles in the eye are considered pathognomonic for miliary TB⁽⁹⁾. The rate of choroidal tubercles was reported between 2% and 21% in miliary TB series. In study conducted by Mert A et al⁽¹⁰⁾, this figure was found to be 8%. Choroidal tubercles are reported to be less frequent in adults than autopsy probably because of not performing a routine eye examination and not using midriatics during this examination. Previous studies reported an underlying disorder making the host vulnerable to miliary TB (HIV infection, collagen-vascular disorder, diabetes mellitus, neoplasm, chronic renal failure, pregnancy, steroid use, and alcoholism) in nearly half (30%–66%) of the cases. The mortality rate is 25% (14%–30%), and seemed to remain unchanged during last 25 years⁽³⁾.

Hyponatraemia and an elevated ALT on admission were associated with an unfavourable clinical course. The causes of hyponatraemia in those with miliary TB are numerous, but are likely to include brain injury as well as adrenal and pituitary dysfunction⁽¹¹⁾.

Miliary TB still remains a treatable cause of death which is more true in HIV+ve patients. Having two very busy big ports in Kachchh district, with more migrant population, we expected to have more cases of HIV and TB. It generated an interest to look into this dual problem so we analysed military TB cases retrospectively.

METHODOLOGY

This was a descriptive study conducted at GAIMS, Bhuj. Adult patients admitted and diagnosed as miliary tuberculosis during Jan 2019 to Dec. 2019 were included in this study. Patients were diagnosed on the basis of clinical presentation, radiological and /or microbiological basis. All the patients were subjected to CXR, HRCT, sputum for AFB and CBNAAT, routine hemogram, LFT, KFT, S. electrolytes, HIV testing, RBS and urine

examination and their results were analysed. Since it was a retrospective study, consent from the patients was not taken. However adherence to the guidelines of the Declaration of Helsinki was always kept.

RESULTS

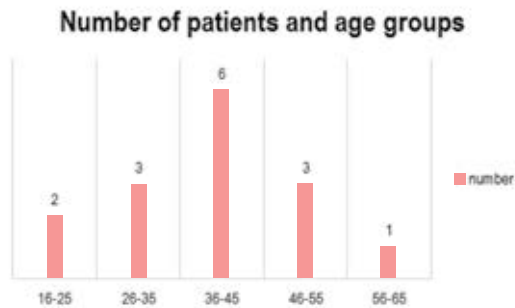
In total 15 adult patients were analysed who were diagnosed as miliary TB on clinical, radiological (CXR and HRCT) and /or bacteriological basis. During the same period a total of 470 adult patients were diagnosed with all forms of tuberculosis in Kachchh district of Gujarat bringing the incidence of miliary tuberculosis to 3.12%. During this period of time 380 patients were diagnosed as new cases of HIV. Thirty-seven patients had HIV-TB coinfection meaning thereby 10.3% of HIV patients had some form of tuberculosis and 7 of them had miliary tuberculosis (18.9%, which is very high in comparison to immunocompetent adults who had 8/433 or 1.84%). The median age of patients of miliary tuberculosis patients was 40 yrs. Twelve of 15 patients were in age group of 26 to 45 yrs, which shows a dramatic shift in age-prevalence of miliary TB. There were 3 females and 12 males. Out of 15 patients 7 were HIV positive and another one had diabetes mellitus. Thirteen patients were anemic (86.6%). Ten out of 15 patients had hyponatremia (67%) that is less than 135 mEq of Na+. Only 2 patients had choroid tubercle (2/15) on fundus examination, one was HIV+ve and the other HIV-ve.

Sputum examination for CBNAAT was positive in 8 patients (4 HIV+ve and 4 HIV -ve). One patient was a contact case of MDRTB and his sputum for CBNAAT also showed rifampicin resistance. One patient who was HIV+ve also had intracranial tuberculoma. Another HIV+ve patient was reactive to syphilis also. One HIV+ve patient had pleural effusion and another HIV+ve had cervical lymphadenopathy.

One female patient of 30 yrs age with no immunocompromised status had abdominal TB, Potts spine and psoas abscess along with miliary TB signifying some other undiagnosed immune deficiency. No patient had tubercular meningitis and only one had tuberculoma in brain who was HIV+ve.

All patients had BCG scar.

All patients were given anti-tubercular treatment according to NTCP guidelines and there was no mortality either in ward or during follow-up till date.



DISCUSSION

Incidence of miliary TB among patients of all forms of TB was 3.12% probably due to high number of HIV+ve patients in our series. If we exclude HIV+ve patients it comes to 1.84 % which is in accordance with other reports. As with other reports⁽¹²⁾ we also noticed male predominance. The changing age prevalence of the disease was also noticed in our study^(3,8).

Forty-six percent of the patients were HIV+ve and all of them had CD4 count <200 with mean being 80. If we include diabetic also 53.3% patients were in immunocompromised category.

The presence of choroid tubercle in 2 (13.3%) patients was similar to other studies⁽¹⁴⁾.

In a large case series of 263 patients of miliary TB from various centres in Turkey, Mert A, et al⁽¹⁰⁾ found anemia in 86.3 % of patients which was almost similar to our study (86.6%). They also found lymphopenia in 48% and we found it in 40% of our patients. Anemia was very common in Saudi Arabian series also. Al-Zahdali et al⁽¹³⁾ found anemia in 66% and lymphopenia in 89% of cases.

The presence of sputum CBNAAT positivity in our series was very significant (53.3%) and it should be the first investigation. The presence of one MDR miliary patient signifies importance of history taking and performing sputum CBNAAT.

Jonathan U et al⁽¹¹⁾ found significant correlation between mortality and hyponatremia and raised ALT. Although two-thirds of our patients had hyponatremia but only 3 had Na+ <125 mEq. and none of them died.

Han Y et al⁽¹⁴⁾ found that pre-treatment Neutrophil-Lymphocyte Ratio (NLR) at admission may be a useful biomarker for mortality and development of Acute Respiratory Distress Syndrome (ARDS) in patients with miliary TB but we could not find this correlation. Our patients had a highly varied NLR ranging from 0.93 to 30 and none of them developed ARDS or died of miliary TB.

None of our patients had tubercular meningitis (TBM). Only one had brain tuberculoma who was HIV+ve. Tanrikulu C et al⁽¹⁵⁾ found TBM in one fourth of their patients.

No mortality was reported either during hospital stay or follow-up, probably because anti-tubercular treatment was started early, even on CXR evidence of miliary pattern. Maartens G et al⁽¹⁶⁾ noted 24% mortality and one of the causes of this was treatment delay. Further, they also found lymphopenia to be very common (in 87%).

CONCLUSION

In endemic country (of TB) like India, miliary TB should be a high consideration in all cases of prolonged fever, which is more true among HIV+ve patients. Besides radiology, a simple test sputum for CBNAAT, available now everywhere, should be recommended at the earliest as it is positive in more than half of the patients. Timely diagnosis with high index of suspicion and early start of anti-tubercular treatment can save the lives of patients who otherwise would definitely succumb to the disease and this was the single most important conclusion of our study.

CONFLICT OF INTEREST

None

ACKNOWLEDGEMENT

None

REFERENCES

1. WHO : Global tuberculosis report 2019. World Health Organization. Geneva. Switzerland.2019
2. Dheda K, Barry CE, Maartens G. Tuberculosis. *Lancet* 2016;387:1211–26
3. Sharma SK , Mohan A , Sharma A . Challenges in the diagnosis & treatment of miliary tuberculosis. *Indian J Med Res* 2012;135:703–30 .
4. Tuddenham WJ . Glossary of terms for thoracic radiology: recommendations of the nomenclature committee of the Fleischner society. *AJR Am J Roentgenol* 1984;143:509–17
5. Lee JY . Diagnosis and treatment of extrapulmonary tuberculosis. *Tuberc Respir Dis Seoul* 2015;78:47–55 .
6. Anonymous Miliary tuberculosis: a changing pattern. *Lancet* 1970;1:985–6
7. Long R , O'Connor R , Palayew M , Hershfield E , Manfreda J . Disseminated tuberculosis with and without a miliary pattern on chest radiograph: a clinical-pathologic-radiologic correlation. *Int J Tuberc Lung Dis* 1997;1:52–8 .
8. Sahn SA, Neff TA. Miliary tuberculosis. *Am J Med* 1974; 56:494–505
9. Sharma SK, Mohan A, Sharma A, et al. Miliary tuberculosis: new insights into an old disease. *Lancet Infect Dis* 2005;5:415–30
10. Mert A, Arslan A, Kuyucu T, Nur EK, Yilmaz M, Turan D. et al. Miliary tuberculosis Epidemiological and clinical analysis of large case series from moderate to low tuberculosis endemic country. *Medicine* (2017) 96:5.
11. Underwood J, Cresswell F, Salam AP, Keeley AJ, Cleland C, John L and Davidson RN. Complications of miliary tuberculosis: low mortality and predictive biomarkers from a UK cohort. *BMC Infectious Diseases* (2017) 17:295
12. Alsoub H , Al Alousi FS . Miliary tuberculosis in Qatar: a review of 32 adult cases. *Ann Saudi Med* 2001;21:16–20 .
13. Al-Zahdali H, Al-Zahrani K, Amene P, Memish Z, Al-Shimemeri A, Moamary M et al. Clinical Aspects of Miliary tuberculosis in Saudi Adults. *Int J Tuberc Lung Dis* 2000 Mar;4(3):252-5.
14. Han Y, Kim SJ, Lee SH, Sim YS, Ryu YJ, Chang JH et al. High blood neutrophil-lymphocyte ratio associated with poor outcome in miliary tuberculosis. *J Thorac Dis* 2018;10(1):339-46.
15. Tanrikulu C, Gurkan F, Dagli CE, Gozu A, Simer A. A comparative review of pediatric and adult patients with miliary tuberculosis. *Eur J Gen Med* 2007;4(2):67-72.
16. Maartens G, Willcox PA, Benatar SR. Miliary tuberculosis: rapid diagnosis, hematologic abnormalities, and outcome in 109 treated adults. *Am J Med* 1990;89:291–6