

## A Study of Miliary Tuberculosis in the Coastal Andhra Pradesh

Dr Bharavi Chunduri<sup>1</sup>, Dr Surya Kumari<sup>2</sup>, Dr Kalyan Kumar PV<sup>3</sup>

<sup>1</sup>Assistant Professor, Department of Respiratory Medicine, Mamatha Medical College, Khammam India

<sup>2</sup>Post Graduate, Department of Respiratory Medicine, Katuri Medical College, Guntur India.

<sup>3</sup>Associate Professor, Department of Respiratory Medicine, Katuri Medical College, Guntur India

### Original Research article

#### \*Corresponding author

Dr Bharavi Chunduri

#### Article History

Received: 31.10.2017

Accepted: 13.11.2017

Published: 30.11.2017



**Abstract:** The aim of the study was 1. To study the clinical profile of miliary Tuberculosis 2. To evaluate the treatment response by symptomatology sputum conversion, radiological resolution after 2 months and 6 months periods 3. To study the complications and incidence of MDR TB in Miliary tuberculosis. This prospective observational study was performed using a data base with 40 patients with provisional diagnosis of miliary tuberculosis during the period of Jan 2014 to April 2015. The clinico-radiological features, treatment response and incidence of complications including the incidence of MDR-TB were analyzed. In the present study mean age of study population is 41 years with male predominance (57.5%). In the present study, duration of symptoms ranged from 10 days to 3 months. Cough, fever, expectoration, loss of weight, loss of appetite, night sweats are the commonest symptoms. 2 cases are with headache and 4 cases have abdominal pain. Diabetes mellitus was seen in 5%, HIV in 12.5% cases and chronic kidney disease in 2.5% cases of study population. 97.5% cases were negative for tuberculin skin test (TST) in the study population. All cases had miliary mottling. Miliary mottling associated with consolidation (2 cases), pleural effusion (6cases), pleural thickening (3 case) and 3 cases had an associated cavitation. 20 cases out of 40(50%) had anemia (<10gmHb%) in the study population. Pancytopenia and leucocytosis were observed in 2.5% of the cases. In the study population 5, out of 40 (12.5%) cases were positive for sputum AFB smear. In the study population, all had miliary nodules. Four cases (10%) had associated mediastinal lymphadenopathy; one case (2.5%) had associated left multi-loculated hydro pneumothorax. One case associated with bilateral upper lobe fibrosis, 3 cases had associated cavity in upper lobe, two cases (5%) had associated segmental consolidation of both upper lobes, 6 cases (15%) had associated minimal pleural effusions (4 on right and 2 on left), 1 case (2.5%) had associated granulomas along right chest wall 1, case (2.5%) had associated peri-bronchial nodular pattern and Tree in buds suggesting endo-bronchial spread of TB. In the present study, USG Abdomen was done in all the 40 cases. Of which 29 (72.5%) were of normal study. Ascites was observed in 4 (10%) cases, tubo-ovarian mass in 1 case (2.5%), grade 1 RPD in one case and pleural effusion was seen in 6 cases (15%). Hepato-splenomegaly was observed in 2 cases (5%).

**Keywords:** Miliary Tuberculosis, MDR TB, HIV, Miliary mottling.

### INTRODUCTION

Miliary TB is produced by acute dissemination of tubercle bacilli through the blood stream. Mortality from military TB disease has remained high. In patients with HIV Infection or AIDS Miliary TB is particularly common [3]. Miliary TB accounts for less than 2% of all cases of TB and upto 20% of all extra pulmonary TB cases. It was 1<sup>st</sup> described by John Jacob Manget.

### METHODOLOGY

This study is a prospective observational study. 40 cases with a provisional diagnosis of military

tuberculosis attending the Respiratory Medicine department at Katuri Medical College Guntur were selected for the study during the period Jan 2014 to Apr 2015. All cases presenting with military mottling in Chest X Ray along with 1. Clinical feature consistent with tuberculosis 2. HIV seropositive cases with constitutional symptoms like pyrexia of unknown origin, unexplained loss of weight for more than 1month and generalised lymphadenopathy were taken in to the study. Age < 13yrs and patients with history of

previous malignancy or pneumoconiosis were excluded from the study.

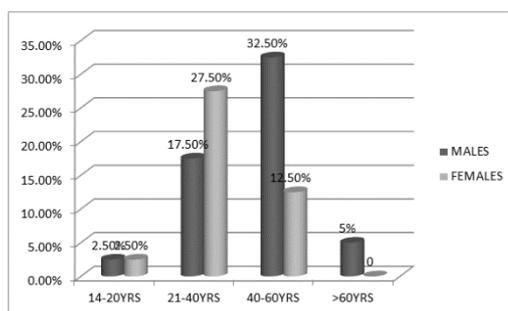
The clinico-radiological features, treatment response and incidence of complications including the incidence of MDR-TB were analyzed. All the selected patients are subjected to the following investigations.

- Routine blood investigations
- ELISA for HIV
- Examination of sputum for AFB for 2 samples
- Roentgenogram - chest PA view
- Tuberculin skin test
- Ultrasound abdomen

- HRCT scan of chest if necessary
- FNAC of lymphnode for HPE/AFB
- Fundus oculi examination
- Pleural fluid analysis
- CSF analysis
- Ascitic fluid analysis
- Bone marrow aspiration biopsy.
- FOB guided TBLB. All the data collected and analyzed.

**RESULTS**

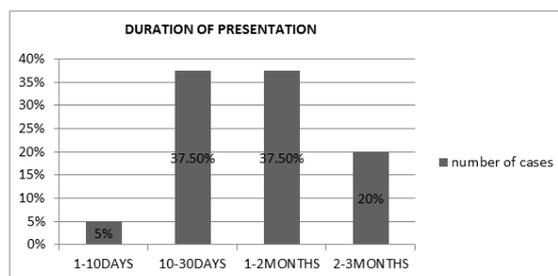
The results obtained were shown in bar charts and tables as below.



**Graph-1**

**Sex distribution**

| SEX    | NUMBER OF CASES |
|--------|-----------------|
| MALE   | 23 ( 57.5%)     |
| FEMALE | 17( 42.5%)      |



**Graph-2**

**Table-4: Symptoms and signs**

| SYMPTOMS            | NUMBER OF CASES (n=40) |
|---------------------|------------------------|
| COUGH               | 36 (90%)               |
| FEVER               | 35(87.5%)              |
| LOSS OF APPETITE    | 32 (80%)               |
| SHORTNESS OF BREATH | 24 (60%)               |
| EXPECTORATION       | 20(50%)                |
| NIGHT SWEATS        | 20( 50%)               |
| LOSS OF WEIGHT      | 18 (45%)               |
| WEAKNESS            | 17 (42.5%)             |
| CHEST PAIN          | 10 (25%)               |
| ABDOMINAL PAIN      | 4 (10%)                |
| HEMOPTYSIS          | 1( 2.5%)               |
| HEADACHE            | 2 (5%)                 |

**Table-5: Risk factors**

| RISK FACTOR | TOTAL CASES(n=40) |
|-------------|-------------------|
| SMOKING     | 18 (45%)          |
| ALCOHOLISM  | 19 (47.5%)        |
| DRUG ABUSE  | 0 (0%)            |

**Table-6: Comorbid conditions**

| COMORBIDITY | NUMBER OF CASES (n=40) |
|-------------|------------------------|
| DIABETES    | 2 (5%)                 |
| HIV         | 5 (12.5%)              |
| CKD         | 1 (2.5%)               |
| NIL         | 32 (80%)               |

**Table-7: Tuberculin skin test**

| TST      | NO. OF CASES (n=40) |
|----------|---------------------|
| POSITIVE | 1(2.5%)             |
| NEGATIVE | 39 (97.5%)          |

**Table-8: CXR findings**

| CHEST X RAY FINDINGS   |                    | NUMBER OF CASES (n=40) |
|------------------------|--------------------|------------------------|
| MILIARY MOTTILING ONLY |                    | 29 (72.5%)             |
| MILIARY MOTTILING WITH | CONSOLIDATION      | 2 ( 5% )               |
|                        | PLEURAL THICKENING | 2( 5%)                 |
|                        | PLEURAL EFFUSION   | 6( 15%)                |
|                        | CAVITY             | 3 (7.5%)               |

**Table-9: Hematological profile**

| HEMATOLOGY PROFILE | NO. OF CASES(n=40) |
|--------------------|--------------------|
| ANEMIA             | 20 (50%)           |
| PANCYTOPENIA       | 1(2.5%)            |
| LEUCOCYTOSIS       | 1 (2.5%)           |
| NORMAL             | 19 (47.5%)         |

**Table-10: Sputum for AFB**

| ACID FAST BACILLI |                          | NO. OF CASES( n=40) |
|-------------------|--------------------------|---------------------|
| NEGATIVE          |                          | 35 (87.5%)          |
| POSITIVE          | SPUTUM FOR AFB 2 SAMPLES | 3 (5%)              |
|                   | INDUCED SPUTUM FOR AFB   | 2 ( 2.5%)           |

**Table-11: HRCT chest findings**

| HRCT FINDINGS        |                                  | NO. OF CASES (n=40) |
|----------------------|----------------------------------|---------------------|
| MILIARY NODULES ONLY |                                  | 25 (62.5%)          |
| MILIARY NODULES WITH | MEDIASTINAL ADENOPATHY           | 4 (10%)             |
|                      | MULTILOCULATED HYDROPNEUMOTHORAX | 1(2.5%)             |
|                      | FIBROSIS                         | 1(2.5%)             |
|                      | CAVITY                           | 3 (7.5%)            |
|                      | CONSOLIDATION                    | 2 (5%)              |
|                      | PLEURAL EFFUSION                 | 6 (15%)             |
|                      | CHEST WALL GRANULOMA             | 1(2.5%)             |
|                      | TREE IN BUDS                     | 1 (2.5%)            |

**Table-12: Ultrasound abdomen findings**

| ULTRASOUND ABDOMEN FINDINGS | NO. OF CASES (n=40) |
|-----------------------------|---------------------|
| NORMAL                      | 29 (72.5%)          |
| ASCITIS                     | 4 (10%)             |
| TUBO OVARIAN MASS           | 1 (2.5%)            |
| RENAL PARENCHYMAL DISEASE   | 2 (5%)              |
| PLEURAL EFFUSION            | 6( 15%)             |
| HEPATOSPLENOMEGALY          | 2( 5%)              |

**Table-13: Treatment given**

| TREATMENT              | NUMBER OF CASES (n=40) |
|------------------------|------------------------|
| ATT IN CONFIRMED CASES | 7 (17.5%)              |
| EMPIRICAL ATT          | 33 (82.5%)             |
| CORTICOSTEROIDS        | 2 (5%)                 |
| NIV                    | 2 (5%)                 |

**Table1-4: Outcome**

| OUTCOME  |          |              | NO. OF CASES (n=40) |
|--|----------|--------------|---------------------|
| CLINICAL AND COMPLETE RADIOLOGICAL IMPROVEMENT | 2 MONTHS | CLINICAL     | 37 (92.5%)          |
|  |          | RADIOLOGICAL | 27 (67.5%)          |
|  | 6MONTHS  | CLINICAL     | 37 (92.5%)          |
|  |          | RADIOLOGICAL | 37 (92.5%)          |
| DEATHS   |          |              | 2 (5%)              |
| LOST TO FOLLOWUP                               |          |              | 1 (2.5%)            |

**Table-15: Complications**

| COMPLICATION           | NO. OF CASES |
|------------------------|--------------|
| DRUG INDUCED HEPATITIS | 1 (2.5%)     |
| PNEUMOTHORAX           | 1(2.5%)      |
| RESPIRATORY FAILURE    | 2 (5%)       |
| NIL                    | 36 (90%)     |

**DISCUSSION**

In the present study mean age of distribution was 41years with MF ratio of 23:17 which is almost same as the study done by Merit *et al.* [7] and comparable to studies of Sang Man Jin *et al.* [4] & Hussam Alsoub[5]. In this study duration of symptoms ranged from 10 days to 3 months with 58% having more than 1 month duration. According to Biehl *et al* it was 7.5 weeks and according to Hussam Alsoub *et al.*[5] it was 10.5 weeks. In this current study the patients present with fever in 88% of cases, anorexia 80%, neck stiffness 5%, headache 5%, abdominal pain 10%, which is comparable to the study of Hussam Alsoub<sup>5</sup> that is fever 90%, cough 53%, night sweats 50% and Merit A *et al.* [7] with fever 100%, neck stiffness 11%. In this current study 3 cases (7.5%) used ATT previously which is comparable to the study of Sang Man Jin *et al.*[5] in which they reported 5 out of 76 cases (7%) used ATT previously. In the present study, smoking history was associated with 18(45%) and alcoholism 19(47%) of cases. Out of 40 cases San Man Jin *et al.* [4] reported smoking history in 20% of cases. Prout *et al.* [9] reported that in 29 of 62 cases

(47%) alcohol is a risk factor. In the Present study anaemia was observed in 50% of cases, leucocytosis in 2.5% of cases and pancytopenia in 2.5% of cases which is comparable to Prout *et al.* [9] study in which anaemia is seen in 34 of 62 cases( 54%), leucocytosis in 19% of cases. Sharma *et al.* [6] reported anaemia in 59% of cases. In this study Miliary TB was associated with diabetes in 5% of cases, HIV in 12.5%, CRF in 2.5% of cases which are comparable to the study of Sang Man Jin *et al.* [4] in which Miliary TB associated with diabetes in 2.6%, HIV 9.2%, CRF 2.6% of cases. According to Hussam Alsoub MD[5] Diabetes in 9% of cases and in Long *et al.* diabetes associated with 31% of Miliary TB cases. In our study by observing the chest x rays miliary mottling occurrence only was seen in 72.5% cases, with associated pneumonia in 5% of cases, with pleural effusion in 15% and cavitation in 7.5% cases. Hussam Alsoub MD [5] reported that miliary mottling occurred only in 18 (59%), pneumonia in 6 (16%), miliary mottling with effusion in 4 (12.5%). Our results were consistent with the results of Hussam Asloub MD [5]. Munt [8] reported miliary mottling of chest x ray in 66.7% cases. In the present study, on the

basis of HRCT chest, random distribution of nodules were seen in 100%, associated bronchogenic spread in 2.5%, pre-existing TB lesion in 2.5%, pleural effusion in 15%, mediastinal adenopathy in 10% and consolidation in 5% cases of miliary tuberculosis. Sang Man *et al.*[5] reported random distribution of nodules in 90%, bronchogenic spread in 56%, pre-existing TB lesion in 12%, pleural effusion in 37%, mediastinal adenopathy in 39%, consolidation in 42% cases of miliary tuberculosis. In the present study, Pleural fluid aspiration was done in 6 cases. In all those, analysis showed lymphocyte predominance with high protein (> 3 gm%) and ADA level (>40 IU/L). All are exudates. AFB was negative in all the cases. AFB positive yield is 4% to 7% in studies by Seibert and Sibley [2] in 200 cases. Sharma *et al.* [6] reported <10% detection of pleural fluid positivity. Maartens G *et al.* [1] reported high ADA level (>40 IU/L) in 7 of 11 serosal exudates. In the present study, Lumbar puncture for CSF analysis was done for 2 cases. Total Cells, glucose both are decreased. Proteins & ADA levels elevated in one case, suggestive of tuberculous pattern. Total count was 500/Cu mm, lymphocyte predominant, proteins 159mg%, sugar 30mg%, chlorides 98 mmol/l and ADA level was 12 U/L. Sharma SK[6] reported that cell count was around 100-500 cells, 95% mononuclear predominant in later stages, protein 100-500mg/dl, glucose 40-50mg% correlating with this study. In the present study, lymph nodes were demonstrated in 3 of 40 (7.5%) cases of miliary TB. Sharma *et al.* [6] reported 26 of 100 (26%) cases of miliary TB, Martens *et al.* [1] reported 21 of 109 (19%) had lymphadenopathy. The present study does not correlated with these studies. In the present study, FNAC of cervical lymphnode was done for 3 cases. Two of 3 cases demonstrated caseating granulomas. None of the 3 cases were positive for AFB. Subramanyam reported 100% demonstration of caseating granulomas. The present study was correlated with the study of Subramanyam. In the present study none of the cases demonstrated choroid tubercles on fundoscopic examination. Sharma *et al.* [6] reported 4 of 100 cases, Prout *et al.* [9] could not record any case out of 59 cases studied. The present study was correlating with the study of Prout *et al.* [9]. In the present study, TB meningitis was diagnosed in 2.5% cases (1 out of 40 cases). Sharma *et al.* [6] reported that TB meningitis has been described in 10 to 30 percent in adult miliary TB cases. In the present study, the encountered complications are drug induced hepatotoxicity (2.5%), pneumothorax (2.5%) and respiratory failure (5%). Study by Hussam Alsoub[5] stated that 2 out of 32 cases(6%) had drug induced hepatotoxicity as a complication, two cases died during the course of treatment. One case had immunosuppression due to HIV and other case had icterus and raised serum bilirubin as poor prognostic factors. In the present study, the mortality rate is 5%

due to respiratory failure. Hussam Alsoub MD[5] reported 3.1% mortality in his study. Sharma [6] in 2005 reported 25-30% mortality rate.

## CONCLUSION

- Miliary tuberculosis is showing a tendency to affect young adults (35-45years) and predominantly males.
- HIV infection also is showing similarity with respect to age and sex.
- HIV is emerging as an important risk factor in the evolution, progression and management of disease.
- The commonest symptoms pertained to respiratory system includes fever, cough, loss of appetite, shortness of breath and weight loss.
- Physical examination revealed lymphadenopathy, hepatomegaly and icterus indicating dissemination.
- Chest X-Ray is the corner stone for diagnosis.
- Chest X ray lesions suggestive of pulmonary tuberculosis are complimentary in diagnosing the miliary mottling as tuberculosis.
- USG Abdomen is useful to detect minimal pleural effusion, organomegaly, ascites and retroperitoneal nodes suggesting dissemination.
- Negative Tuberculin test does not exclude the possibility of miliaryTB.
- In geographical areas, where the prevalence of TB is high, when a patient presents with compatible clinical picture and a chest radiograph suggestive of classical miliary pattern, early initiation of ATT can be life saving, keeping in mind the potential lethality of the condition. Measures to confirm the diagnosis can be carried out simultaneously along with initiation of treatment.

## REFERENCES

1. Miliary tuberculosis: rapid diagnosis, haematological abnormalities, and outcome in 109 treated adults by Martens G. *Am J Med* 1990 Sep;89(3)291-6.
2. Seibert and Sibley Tuberculosis and HIV infection volume 105, may 1994, p 1338-1341.
3. National Institute of Health (U.S.) Tuberculosis (TB). 2010.
4. Frequency and predictors of miliary tuberculosis in patients with miliary pulmonary nodules in South Korea:a retrospective cohort study by sang man jin et al *BMJ Infectious diseases* 26 Nov 2008.
5. MILIARY tuberculosis in Qatar. A review of 32 adult cases by Hussam Alsoub MD, *Annals of Saudi Medicine*, Vol 21, Nos1-2 July4, 2000.
6. Sharma SK, Mohan A, Sharma A, Mitra DK. Miliary tuberculosis. New insight into an old disease. *Lancet infect Dis.* 2005 Jul.5(7):415-30.
7. Mert A, Bilir M, Tabak F, Ozaras R, Ozturk R, Senturk H, Aki H, Seyhan N, Karayel T, Aktuglu Y. Miliary tuberculosis: clinical manifestations,

diagnosis and outcome in 38 adults. *Respirology*. 2001 Sep 8;6(3):217-24.

8. Munt PW. Miliary tuberculosis in the chemotherapy era: with a clinical review in 69 American adults. *Medicine (Baltimore)* 1972;51:139-55
9. Prout S, Benatar SR, Disseminated tuberculosis. A study of 62 cases. *S Afr Med J* 1980;58:835-42.