



## A CONFUSING CASE OF MILITARY CHEST RADIOGRAPHY

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### ABSTRACT

Miliary shadow is often misdiagnosed as tuberculosis owing to the high incidence and prevalence. This is a case report of 55 year old female patient, presented with history of productive cough, breathlessness and decreased appetite. Chest examination revealed bilateral crepitation. Chest X ray showed bilateral military opacities. HRCT (High resolution computed tomography) chest showed multifocal nodular opacities of varying sizes in both lungs. Bronchoscopy with BAL (Broncho-alveolar lavage) was negative for gene expert MTB complex but positive for KOH mount and culture (*Aspergillus fumigatus*). The endobronchial and transbronchial mediastinal lymph node biopsy was done which showed moderately differentiated adenocarcinoma with mediastinal lymph node metastasis. Patient was diagnosed to be having Adenocarcinoma of lung with skeletal metastasis and secondary Aspergillosis infection. She was managed with Voriconazole, nebulization, chemotherapy and other supportive treatment. This case report highlights about other causes of miliary shadow in our country which is endemic for tuberculosis.

**Key words:** Miliary shadow, Aspergillosis, Adenocarcinoma, Tuberculosis.

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DOI: <a href="http://dx.doi.org/10.21276/ijacr.2019.6.2.4">http://dx.doi.org/10.21276/ijacr.2019.6.2.4</a>		
Received:25.06.19	Revised:12.07.19	Accepted:15.07.19

### INTRODUCTION

Miliary mottling is innumerable radiopaque sub-centimetric pulmonary nodules scattered throughout lungs. Causes of miliary pattern on radiographs are many. A proper protocolised approach in patients with miliary shadow chest X-ray can help in correct diagnosis of the disease. Adenocarcinoma of the lung and Aspergillus infection can appear as miliary shadow.

### CASE REPORT

A 55 year old female patient, known case of

hypertension and diabetes mellitus presented to ER with history of bilateral chest pain, productive cough, breathlessness, loss of weight and decreased appetite since two weeks. On further examination patient was conscious and oriented, moderately built and nourished with heart rate of 70 beats per minute, blood pressure -150/90 mmHg, respiratory rate 20 breaths per minute and Spo<sub>2</sub> of 95% on room air. Chest examination revealed bilateral crepitation. Blood investigations revealed hemoglobin 12.4g/dl, total leucocytes 3200 cells/cumm, platelets 3, 27,000 cells /cumm. Liver function tests revealed elevated transaminases (AST-627, ALT-296). Renal function test was normal. C-reactive protein was 3.6 mg/dl. Serology (HIV, HbsAg and HCV) was negative. Further investigations like Chest X ray revealed bilateral military opacities (Figure-1). HRCT chest showed multifocal

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nodular opacities of varying sizes in both lungs (Figure-2), few of these lesions show cavities and some are sub pleural in location, spiculated lesion in the apical segment of left lower lobe and moderate left pleural effusion. She was diagnosed elsewhere as pulmonary TB and started with ATT drugs before she came to our centre. Bronchoscopy with BAL was negative for gene expert MTB complex, negative for malignant cells but positive for KOH mount. The endobronchial and transbronchial mediastinal lymph node biopsy was done which showed moderately differentiated adenocarcinoma with mediastinal lymph

node metastasis. Galactomannan (Aspergillus antigen) serum test was negative. On further evaluation such as PET-CT scan revealed hypermetabolic spiculated malignant lung mass in the apical segment of the left lung lower lobe with innumerable bilateral pleuropulmonary, mediastinal and abdominal –aortocaval lymph nodes and a discrete L3 skeletal metastases. Patient was diagnosed to be having Adenocarcinoma of lung with skeletal metastasis and secondary Aspergillosis infection. She was treated with adequate nutrition, nebulization, Voriconazole and other supportive treatment.

**Figure 1:- Antero-posterior view Chest X ray showing bilateral military opacities**



**Figure 2:- HRCT chest showing multifocal nodular opacities of varying sizes in both lungs.**



## DISCUSSION:

Miliary pattern on chest X-ray is usually tempting and many physicians end up in treating as pulmonary tuberculosis if not properly evaluated. The proper evaluation is must for better outcome. Differential diagnoses for miliary shadow are miliary tuberculosis, pneumoconiosis, sarcoidosis, mycoplasma, nocardia, blastomycosis, histoplasmosis, pulmonary siderosis, hypersensitivity pneumonitis, tropical pulmonary eosinophilia, broncho-alveolar carcinoma and hematogenous spread from kidney, thyroid and sarcoma.

In case of primary lung cancer, the miliary shadows are due to hematogenous spread [1]. Adenocarcinoma or non-small cell carcinoma of the lung is the most common type of lung cancer which appears as miliary nodules on chest X-ray. Patients usually present with coughing up blood or rust colored phlegm, breathlessness, decreased appetite, loss of weight and recurrent lung infection. Our patient also had similar features. This cancer tends to be more peripheral distribution which grows more slowly with smaller mass and metastasize at an early stage. Adenocarcinoma is not very much sensitive to radiation therapy. Patients with ALK or ROS1 mutations respond to Crizotinib where as

tumors with mutations in EGFR respond to gefitinib, erlotinib, and afatinib.

Aspergillus is another cause of miliary mottling, commonly isolated from both outdoor and indoor environment. The clinical manifestations of aspergillosis vary from noninvasive disease (colonization, aspergilloma) or allergic response (allergic broncho-pulmonary aspergillosis) to invasive infections (chronic necrotizing pneumonia, invasive pulmonary aspergillosis) [2]. Aspergillus fumigatus is responsible for majority of (90%) of invasive disease and remaining by other strains. Commonly seen in immuno-compromised host and definitive diagnosis is by demonstration of branching septate hyphae on microscopic examination of tissue. Serum antibody testing (Galactomannan assay) has 44 to 90% sensitivity. Our patient had negative antibody assay. Voriconazole is the recommended therapy for most patients with invasive pulmonary aspergillosis [3].

Only best way to treat this diagnostic dilemma (in case of miliary shadow) is through proper planning and evidence based approach [4]. Diagnosis is usually chest X-ray, which commonly picks up miliary nodules but doesn't differentiate among other causes. HRCT may be helpful in case of doubt regarding the miliary nodules. Miliary

nodules in relation to the secondary pulmonary nodule can be helpful in differentiating different causes of miliary shadows [5]. Centrilobular distribution is seen in case of hypersensitivity pneumonitis and pulmonary langerhans cell histiocytosis. Random distributions of nodules are seen in tuberculosis, silicosis and hematogenous spread of distant malignancy. Perilymphatic distributions are seen in case of sarcoidosis, silicosis and lymphangitic carcinomatosis. Rauf et al [6] have developed novel approach for diagnosis on miliary nodules on HRCT. Sharma et al [7] have recommended the approach to diagnose the suspected miliary tuberculosis. Extra pulmonary tubercular involvement should be evaluated in

case of suspected miliary shadows. Skin lesions, lymph nodes enlargement, hepato-splenomegaly, effusions and signs of central nervous system involvement may be the additional factors which can support miliary tuberculosis.

A focused novel diagnostic approach in patients having miliary shadows on chest X-ray can help in correct diagnosis of the condition and appropriate timely treatment can reduce morbidity and mortality.

#### ACKNOWLEDGEMENTS

We gratefully acknowledge the nurses and management of the hospital for their valuable support.

#### DECLARATION OF INTEREST

None declared.

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#### Cite this article:

Shreya kaundinya, Pradeep M. Venkategowda, Potti Jagadeesh kumar, Ashwini Murthy. A Confusing Case Of Military Chest Radiography. *International Journal of Advances In Case Reports*, 6(2), 2019, 41-43.

DOI: <http://dx.doi.org/10.21276/ijacr.2019.6.2.4>



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