

## Pneumothorax revealing miliary tuberculosis: A case report

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### Abstract

Pulmonary tuberculosis can take several clinical and radiological forms; spontaneous pneumothorax is a serious complication of tuberculosis, and tuberculous miliary is a severe form of secondary tuberculosis due to hematogenous dissemination of *Mycobacterium tuberculosis*. We report a case of tuberculous miliary revealed by pneumothorax. The patient was 57 years old and a farmer. He was been presented to the emergency department of Mohamed VI University Hospital in Marrakech with acute dyspnea associated with chest pain. Clinical examination and imaging revealed a spontaneous pneumothorax that complicated tuberculous miliary. Treatment consisted of a combination of anti-tuberculosis chemotherapy, chest drainage, and kinesiorespiratory therapy. The outcome was favorable, with improvement in clinical and radiological signs. Pneumothorax complicating TM requires careful diagnosis and prompt management to improve prognosis.

**Keywords:** Miliary tuberculosis; Spontaneous pneumothorax; Rare complication; *Mycobacterium tuberculosis*

### 1. Introduction

Pneumothorax is the presence of air in the pleural space in the absence of trauma. We speak of "spontaneous" pneumothorax, which corresponds to an underlying pulmonary disease, and "secondary" pneumothorax when there is an underlying disease [1].

Tuberculosis is an infectious disease transmitted from person to person and is caused by Koch's bacillus. Approximately eight million people develop tuberculosis each year. Two to three million patients die of tuberculosis each year. Pulmonary tuberculosis is still a public health problem [2].

Miliary tuberculosis is the most serious form, resulting from the dissemination, usually hematogenous, of *Mycobacterium tuberculosis* throughout the viscera. Its prognosis has been improved by anti-tuberculosis chemotherapy [3]. Pneumothorax is a well-known complication of cavitary tuberculosis, but it is rarely a complication of acute miliary tuberculosis of the lung [4]. Certain forms of tuberculous pneumothorax, such as spontaneous pneumothorax, may be observed during miliary tuberculosis or in late fibrous sequelae [5].

We report the case of a 57-year-old patient with spontaneous pneumothorax revealing TM.

### 2. Patient and Observation

A 57-year-old man from the rural region of Rhamna, Morocco, a 20-AD smoker with no recent tuberculosis infection, presented with a chronic dry cough unimproved by antibiotics and no other thoracic or extrathoracic signs. He had a

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fever of 39 degrees and general ill-health one week before admission to our clinic, presenting with acute dyspnea and stabbing chest pain on the left side without hemoptysis or headache. On examination, the patient was afebrile, malnourished with a BMI of 14 kg/m, pulse of 106 bpm, blood pressure of 110/60 mm Hg, and tachypnea at 28 cycles/min with an oxygen saturation of 92% on room air. Pleuropulmonary examination revealed left air effusion syndrome. The rest of the systemic examination was normal.

The standard chest X-ray showed a left pneumothorax with a great abundance index light of 45% and bilateral micronodular millet grain lesions (fig. 1). The initial laboratory work-up showed an Hb level of 12g/dl, a white blood cell count of 9000/ $\mu$ L with 1500/uL lymphocytes and 6960/uL polynuclear cells, and a CRP level of 162 mg/L. Gene Xpert and BK sputum cultures were positive, with no resistance to rifampicin. The dissemination assessment was negative. As a treatment an intercostal chest tube drainage connected to an underwater seal bottle was put on the left side resulting in relief in symptoms, and patient was put on antitubercular treatment. Five days post intercostal chest tube drainage chest X-ray showed complete resolution of pneumothorax (fig 2) and intercostal chest tube drain was removed. The course was favorable, with improvement in clinical and radiological signs.



**Figure 1** Chest X-ray postero-anterior view on admission showed a left sided pneumothorax with military mottling.



**Figure 2** (Post ICTD Chest X-ray) Chest X-ray postero-anterior view showing resolution of pneumothorax after intercostals tube drainage with military shadows

### 3. Discussion

The association between miliary tuberculosis and pneumothorax is a rare radiological entity. Although pneumothorax is a well-known complication of cavitary tuberculosis, it is rarely observed and is potentially fatal in miliary tuberculosis [6]. However, the exact pathogenesis of this complication remains uncertain; the most likely mechanism is necrosis of a subpleural nodule or rupture of an emphysema bulla[7]. Tuberculosis pneumothorax affects more men than women, a predominance demonstrated by several studies [8]. Chest pain is the main symptom, and may be associated with dyspnea, coughing with sputum, rarely hemoptysis, and a change in general condition. Physical examination revealed decreased mobility of the affected hemithorax, abolition of vesicular murmurs, tympany on percussion, tachycardia, and subcutaneous emphysema.

In our patient, we found a large left pneumothorax associated with bilateral millet grain micronodules.

The detection of *Mycobacterium tuberculosis* establishes a definitive diagnosis of TM [9]. Direct microscopy of sputum, gastric tubes, tests for BK in bronchial aspirates and bronchoalveolar lavage fluid, and skin tests are more often negative in TM (40% - 92%). Standard laboratory tests are not specific.

In this study, a positive diagnosis of miliary tuberculosis was made on the basis of a positive XPERT gene and BK culture.

The treatment of tuberculous pneumothorax is based on antibacillary treatment, thoracic drainage, and respiratory physiotherapy. Surgery has specific indications [10].

For our patient we started appropriate anti-tuberculosis regimens. The emergency intervention for pneumothorax in miliary tuberculosis is tube thoracostomy.

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#### 4. Conclusion

Pneumothorax developing in a patient of miliary tuberculosis can be missed as the breathlessness and the dry cough that are the cardinal features of pneumothorax are also seen in patients with miliary tuberculosis without any pneumothorax. Therefore, in a patient of miliary tuberculosis diagnosis of pneumothorax should be kept in mind if it presents with or develops respiratory distress.

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#### Compliance with ethical standards

##### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

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#### Reference

- [1] Tran, J., Haussner, W., & Shah, K. (2021). Traumatic Pneumothorax: A Review of Current Diagnostic Practices And Evolving Management. *The Journal of Emergency Medicine*. August 29, 2021;10:39
- [2] Raviglione, M.C. (2003) The TB Epidemic from 1992 to 2002. *Tuberculosis*, 83, 4-14. [https://doi.org/10.1016/S1472-9792\(02\)00071-9](https://doi.org/10.1016/S1472-9792(02)00071-9)
- [3] Abderrahmani, W., Hammache, N., Ihadjadene, L., Meguenni, W., Hameg, A., & Fissah, A. (2016). Pneumothorax et tuberculose : aspects cliniques et évolutifs. *Revue Des Maladies Respiratoires*, 33, A144.
- [4] Narang, R.K., Kumar, S. and Gupta, A. (1977) Pneumothorax and Pneumomediastinum Complicating Acute Miliary Tuberculosis. *Tubercle*, 58, 79-82. [https://doi.org/10.1016/0041-3879\(77\)90033-2](https://doi.org/10.1016/0041-3879(77)90033-2)
- [5] Belmonte, R. and Crowe, H.M. (1995) Pneumothorax in Patients with Pulmonary Tuberculosis. *Clinical Infectious Diseases*, 20, 1565. <https://doi.org/10.1093/clinids/20.6.1565>
- [6] Aktoğu, S., Yorgancioglu, A., Cirak, K., Köse, T. and Dereli, S.M. (1996) Clinical Spectrum of Pulmonary and Pleural Tuberculosis: A Report of 5,480 Cases. *European Respiratory Journal*, 9, 2031-2035. <https://doi.org/10.1183/09031936.96.09102031>
- [7] Wammanda RD, Ameh EA, Ali FU. Bilateral pneumothorax complication of miliary tuberculosis in children: Case report and review of literature. *Ann Trop Paediatr* 2003; 23: 149–152.
- [8] Hassine, E., Marniche, K., Bousnina, S., Rekhis, O., Rabah, B., Mustapha, M.A.B., et al. (2002) Tuberculous Pyothorax. 28 Cases. *Presse Medicale (Paris, France: 1983)*, 31, 921-927.
- [9] Carbonnelle, B. and Rousselet, M.C. (2002) Biological Diagnosis of Tuberculosis. *Revue du Praticien*, 52, 2115-2120.
- [10] Arya M, George J, Dixit R, Gupta RC, Gupta N. Bilateral spontaneous pneumothorax in miliary tuberculosis. *Indian J Tuberc* 2011; 58: 125-128.