Scholars Journal of Medical Case Reports
Abbreviated Key Title: Sch J Med Case Rep
ISSN 2347-9507 (Print) | ISSN 2347-6559 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Radiology

Tuberculous PYO-Pneumothorax: A Rare and Severe form of Tuberculosis

Youssef Bouktib[1*], N. Yassine[1], B. Boutakioute[1], M. Ouali Idrissi[1], N. Cherif Idrissi El Guennouni[1]

[1]Radiology Department, Arrazi Hospital Mohammed VI University Hospital, Faculty of Medicine and Pharmacy, Cadi Ayyad Marrakech University, Morocco

DOI: 10.36347/sjmcr.2023.v11i05.008 | **Received:** 09.03.2023 | **Accepted:** 23.04.2023 | **Published:** 03.05.2023

***Corresponding author:** Youssef Bouktib
Radiology Department, Arrazi Hospital Mohammed VI University Hospital, Faculty of Medicine and Pharmacy, Cadi Ayyad Marrakech University, Morocco

Abstract **Case Report**

***Introduction*:** Tuberculosis is still a public health problem in Morocco. Tuberculous pyopneumothorax is a rare but serious complication secondary to the rupture of a tuberculous cavern in the pleural cavity. It is a well-known clinical form occurring mainly in extensive forms of tuberculosis and in frail patients. In our context, it poses a management problem. We report the case of a young man, chronic smoker, who presented with dyspnea and productive cough revealing a tuberculous pyopneumothorax. ***Case Report*:** The patient was a 28 year old male, chronic smoker with 10 PA always active, without any particular pathological history, who had been presenting for 2 months with a productive cough bringing back yellowish sputum with Sadoul stage III dyspnea, and progressive chest pain, all evolving in a context of altered general condition and feverish feeling. The clinical examination found a conscious patient, polypneic at 26 cpm, febrile at 38C°, hemodynamically stable, with objective pleuro pulmonary examination of a left aerial pleural effusion syndrome. A chest X-ray was requested in first intention, objectifying an opacity occupying the internal 2/3 of the left pulmonary hemichamp, not very dense, heterogeneous, seat of some cartées within it in connection with bronchograms with a clear external and internal limit drowned in the mediastinum, a left pneumothorax of great abundance made of an axilobasal parenchymatous hyperclarity without vascular framework with enlargement of the EICs and refoulement of the elements of the mediastinum towards the counter lateral side, and a filling of the left costo diaphragmatic cul de sac. A complementary thoracic CT scan noted a left hydropneumothorax of great abundance associated with pneumonic foci complicated by abscesses and multiple branching micronodules of the right upper lobe and middle lobe suggestive of a tuberculous origin. A drainage of the pyo-pneumothorax was performed with a bacteriological, cytological and biochemical study, Xpert gene of the pleural fluid, evoking a hydropneumothorax of tuberculous origin. ***Conclusion*:** Tuberculous pyopneumothorax is a severe form, which is often related to active cavitary tuberculosis. The course is usually protracted despite anti-tuberculosis treatment and chest drainage, hence the need for early diagnosis and treatment of any form of tuberculosis.

Keywords: Tuberculous pyopneumothorax, cavity, pyo-pneumothorax, bronchograms, chest drainage.

INTRODUCTION

Tuberculosis is still a public health problem in Morocco. Tuberculous pyopneumothorax is a rare but serious complication secondary to the rupture of a tuberculous cavern in the pleural cavity.

It is a well-known clinical form occurring mainly in extensive forms of tuberculosis and in frail patients. In our context, it poses a management problem.

We report the case of a young man, chronic smoker, who presented with dyspnea and productive cough revealing a tuberculous pyopneumothorax.

CASE REPORT

The patient was a 28-year-old male, chronic smoker with 10 PA always active, without any particular pathological history, who had been presenting for 2 months with a productive cough bringing back yellowish sputum with Sadoul stage III dyspnea, and progressive chest pain, all evolving in a context of altered general condition and feverish feeling.

The clinical examination found a conscious patient, polypneic at 26 cpm, febrile at 38C°, hemodynamically stable, with objective pleuro pulmonary examination of a left aerial pleural effusion syndrome.

A chest X-ray was requested in first intention, objectifying an opacity occupying the internal 2/3 of the left pulmonary hemichamp, not very dense, heterogeneous, seat of some cartées within it in connection with bronchograms with a clear external and internal limit drowned in the mediastinum, a left pneumothorax of great abundance made of an axilobasal parenchymatous hyperclarity without vascular framework with enlargement of the EICs and refoulement of the elements of the mediastinum towards the counter lateral side, and a filling of the left costo diaphragmatic cul de sac.

A complementary thoracic CT scan noted a left hydropneumothorax of great abundance associated with pneumonic foci complicated by abscesses and multiple branching micronodules of the right upper lobe and middle lobe suggestive of a tuberculous origin.

A drainage of the pyo-pneumothorax was performed with a bacteriological, cytological and biochemical study, Xpert gene of the pleural fluid, evoking a hydropneumothorax of tuberculous origin.

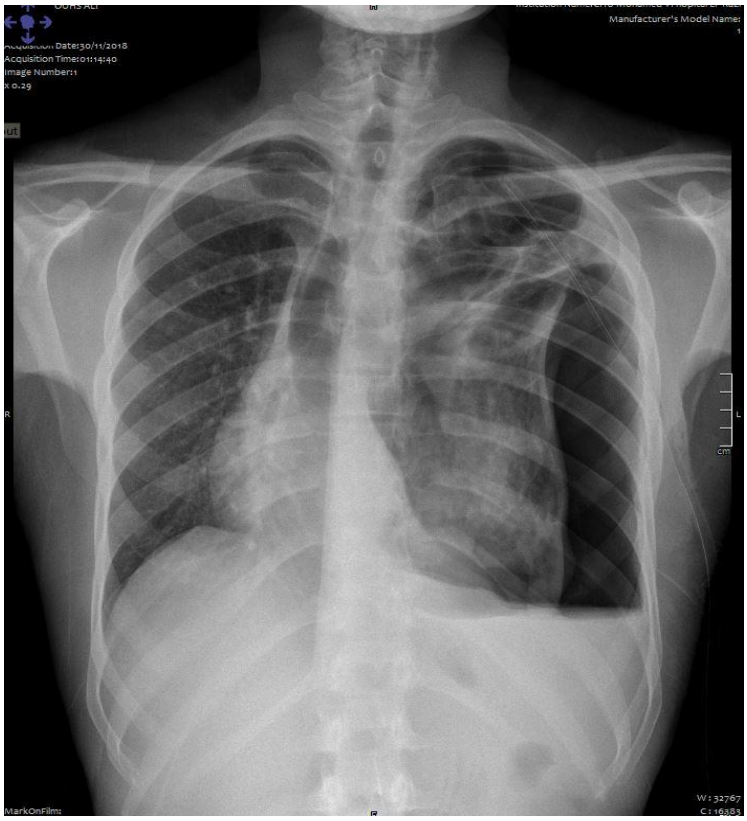
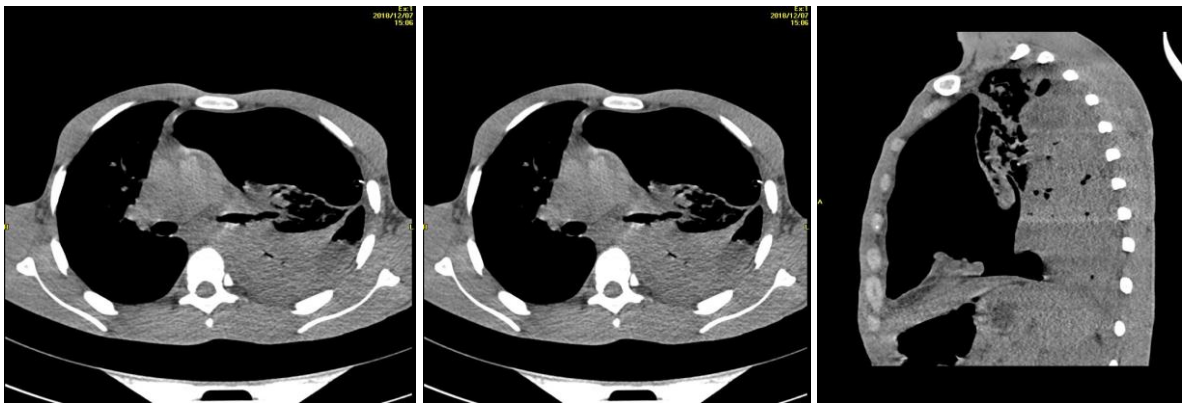


Figure 1: chest X-ray showing an opacity occupying the inner 2/3 of the left pulmonary, not very dense, heterogeneous, with some cartées within it in relation to bronchograms with a clear external and internal boundary embedded in the mediastinum. Left pneumothorax of great abundance made of an axilobasal parenchymatous hyperclarity without vascular framework with enlargement of the EICs and refoulement of the elements of the mediastinum towards the counter lateral side.



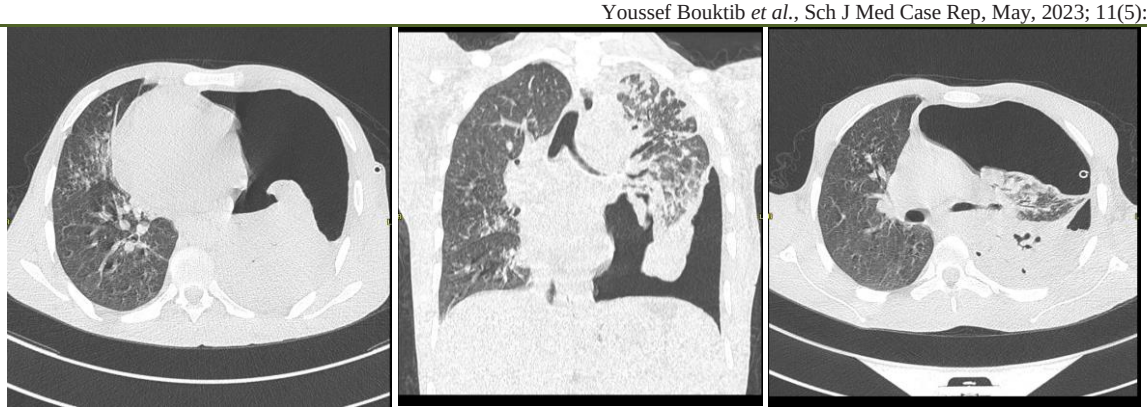


Figure 2: Chest CT scan in axial sections in parenchymal and mediastinal window: Large left hydropneumothorax associated with pneumonic foci complicated with abscessation and multiple branching micronodules of the right upper and middle lobe suggestive of a tuberculous origin

DISCUSSION

Tuberculous pneumothorax is a rare and particularly severe form of tuberculosis. It can complicate pulmonary or pleural tuberculosis, often cavitary tuberculosis, but some forms can be observed during miliary disease or in late fibrous sequelae.

Two pathophysiological mechanisms have been suggested: in the first theory, the rupture of a tuberculous cavern would determine a broncho-pleural fistula; the irruption of the caseum into the pleural cavity would cause local fibrosis responsible for a defect in the expansion of the parenchyma. In the other theory, the mechanism would be based on the development of bronchiolar lesions, a localized trapping phenomenon would favour the appearance of blebs whose rupture would lead to the irruption of air into the pleural cavity.

Standard chest radiography shows a combination of several images: encysted pleural opacities, pleural thickening, hydro-aerosic level with homolateral or bilateral pulmonary tuberculosis lesions, and rarely images of costal lysis.

In addition, chest CT and magnetic resonance imaging may be useful for detecting nodular lesions, skin fistulization, costal osteitis, or pleural thickening. The diagnosis of tuberculous pneumothorax is easily made when fibro- cavitary parenchymal lesions are associated with the pneumothorax. Positive bacilloscopies confirm the tuberculous etiology. The difficulties arise when the pyopneumothorax is isolated: the isolation of Koch's bacillus in the pleural fluid being rare, the proof of tuberculous origin can sometimes only be provided on pleural decortication and/or lung excision specimen. The polymerase chain reaction is a relatively recent technique of gene amplification.

It is very sensitive for lung samples with a positive direct examination, but shows a great variability for samples with a negative direct examination. In cases of isolated pyopneumothorax, it can be performed on pleural fluid samples or on biopsy fragments of the pleura, but a negative response will not exclude the diagnosis of tuberculosis.

Bronchial fibroscopy may be useful in diagnosing a bronchopleural fistula, which is confirmed by injection of orange-red intrapleural rifampicin into the bronchial secretions and then into the sputum. Bronchopleural fistula is frequently diagnosed on sputum of pleural pus, with or without the aid of the intrapleural intrapleural injection of rifampicin.

The treatment of tuberculous pyo-pneumothorax is based on: correct anti-tuberculosis treatment; thoracic drainage, sometimes guided by ultrasound detection, which may allow closure of the bronchopleural fistula after a few weeks, and may be associated with daily and repeated saline washings and aspirations. This can be associated with daily and repeated saline washings and aspirations, sometimes using streptokinase; adapted and well followed physical therapy.

The treatment of tuberculous pyo-pneumothorax is based on correct antituberculosis treatment; thoracic drainage sometimes guided by an ultrasound survey which can allow the closure of the bronchopleural fistula after a few weeks, which can be associated with daily and repeated saline washings and aspirations, sometimes using streptokinase streptokinase; an adapted and well followed physical therapy.

CONCLUSION

Pulmonary tuberculosis is still a public health problem in low-income countries. Positive diagnosis of tuberculous pyo-pneumothorax is often easy. Its treatment remains difficult, marked by a prolonged duration of drainage and antituberculosis treatment and a late recourse to surgery. Tuberculous pyo-

pneumothorax is often related to active cavitary tuberculosis, its diagnosis is often bacteriological.

BIBLIOGRAPHY

- Belmonte, R., & Crowe, H. M. (1995). Pneumothorax in patients with pulmonary tuberculosis. *Clin Infect Dis*, *20*(6), 1565.
- Hassine, E., Marniche, K., Bousnina, S., Rekhis, O., Rabah, B., Ben Mustapha, M. A., Chabbou, A., & El Gharbi, B. (2002). Le pyothorax tuberculeux. *Press Med.*, *31*(20), 921. PubMed | Google Scholar
- Mezghani, S., Abdelghani, A., Njima, H., Hayouni, A., Garrouche, A., Klabi, N., Benzarti, M., & Jerray, M. (2006). Le pneumothorax tuberculeux : étude rétrospective de 23 cas à l'Hôpital Farhat-Hached de Sousse, Tunisie. *Rev Pneumol Clin*, *62*(1), 13-18. PubMed | Google Scholar
- PisMennyi, A. K., Fedorin, I. M., & Muryshkin, E. V. (2002). Particularité du pneumothorax spontané chez les patients atteints de tuberculose pulmonaire. *Probl Tuberk*, *4*, 25 -7.
- Purek, L., Frey, J. G., Tschopp, J. M., Licker, M., & Spiliopoulos, A. (2009). La fistule bronchopleurale: une complication grave de la chirurgie thoracique: Pneumologie. *Revue médicale suisse*, *5*(203).
- Sharma, N., & Kumar, P. (2002). Miliary tuberculosis with bilateral pneumothorax: a rare complication. *Indian J Chest Dis Allied Sci*, 44(2), 125-7.
- Sharma, T. N., Jain, N. K., Madan, A., Sarkar, S. K., & Durlabhji, P. (1983). Tubercular empyema thoracis: a diagnostic and therapeutic problem. *The Indian journal of chest diseases & allied sciences*, *25*(2), 127-131.
- Slimene, M. (2005). Le Pneumothorax Tuberculeux. Thèse de doctorat en médecine, Tunisie, n° 67.
- Taeib, J. M. (1980). Pyopneumothorax tuberculeux. Thèse de doctorat en médecine, Paris n° 59.
- Woodring, J. H., Vandiviere, H. M., Fried, A. M., Dillon, M. L., Williams, T. D., & Melvin, I. G. (1986). Update: the radiographic features of pulmonary tuberculosis. *American journal of roentgenology*, *146*(3), 497-506. PubMed | Google Scholar