Tuberculous empyema: Indications / Timing

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Introduction

- 5% of patients with TB develop pleural effusion
- 2nd most common site of extra-pulmonary TB
Pleural tuberculosis

1. Tuberculous pleuritis
2. Tuberculous empyema
3. Late pleural and extra-pleural complication during collapse therapy
4. TB effusion in HIV/AIDS patients

Shield T: General Thoracic surgery 7th edition
Tuberculous and fungal infections of pleura
Tuberculous pleuritis

- During primary TB
- Incidence: 5% of Pulmonary TB
- Serofibrinous fluid
- Rupture of subpleural caseous foci into pleural space
Tuberculous pleuritis

- Clinical
  - Low-grade fever, weakness, weight loss, night sweat, nonproductive cough, pleuritis chest pain

- Investigation
  - Chest X-ray: pleural effusion ± parenchymal lesion
  - CT scan: assess pleural thickening and fluid buildup
Tuberculous pleuritis
Tuberculous pleuritis

- Diagnosis
  - Pleural fluid
  - AFB stain
  - Pleural fluid culture
  - ADA
  - Pleural biopsy
- Concomitant parenchymal disease 1/3 of cases
Tuberculous pleuritis

- Diagnosis
  - Pleural fluid positive for M. Tuberculosis
  - Pleural biopsy: Tuberculous granuloma, caseous granuloma
Tuberculous pleuritis

- Spontaneous re-sorption
- Management
  - Anti-tuberculous + Close observation
  - Drainage
  - Decortication
  - VATS
Tuberculous pleuritis: Decortication

- Thoracocentasis fails to yield fluid or to alter radiographic appearance.
- Thick pleural peel
- Trapped lung
- Pleural fluid ≥ 1/3 hemithorax

Timing:
- After 2 to 4 months of drug therapy (Shields: General thoracic surgery 7th ed)
- At least 6 weeks (Khaled MA. 2000)
Tuberculous pleuritis
Tuberculous empyema

- Pleural reactivation of TB
- Purulent effusion
- Sequelae of pulmonary TB
- Clinical: low-grade fever, dyspnea, ± chest pain
- Abundant sputum – bronchopleural fistula
Tuberculous empyema

**Diagnosis**

- Purulent pleural fluid
- AFB stain and gram stain or culture
- Chest X-ray
  - Air-fluid level suggest bronchopleural fistula

*Fig. 1. Pre-operative chest X-ray of right organizing tuberculous empyema.*
Tuberculous empyema

Management
- Adequate drainage
  - Chest drain
  - Open pleural window
- Convert sputum cultures with medical treatment before resection
- Definitive treatment
Definitive treatment

- Decortication
- Lung parenchymal resection
- Extra-pleura pneumonectomy
- Open window thoracostomy
Decortication

- symptomatic extra-parenchymal restrictive disease secondary to fibrothorax
- thoracentesis, tube drainage, or thoracoscopy have failed to drain the pleural space and expand the lung

**Indication**
- The pleural peel has been present for more than 4-6 weeks
- Lung symptoms are disabling
- There is radiological evidence of a trapped lung
Additional parenchymal resection

- MDR-TB
- Hemoptysis
- Aspergilloma
- Cystic bronchiectasis/infection

Avoid pneumonectomy whenever possible
Extra-pleura pneumonectomy

- Symptomatic severe destroyed lung
  - Bronchopleural fistula
  - Hemoptysis
Appropriate timing of surgical intervention

- After 2 to 4 months of drug therapy (Shields: General thoracic surgery 7\textsuperscript{th} ed)
- At least 6 weeks (Khaled MA. 2000)
Management of tuberculous empyema

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Abstract

Objective: In an attempt to establish a treatment protocol for tuberculous empyema, we retrospectively reviewed our experience over a 3-year period. Methods: Between January 1996 and December 1998, 26 patients (23 male and three female) with an average age of 33.8 years (range 18–61 years) presented with tuberculous empyema. The empyema was right-sided in 13, left-sided in 12 and bilateral in one patient. Patients presented with respiratory symptoms for a mean duration of 4.43 months (range 1–48 months). All patients had a computerized scan of the chest and managed according to the stage of empyema. Results: In patients with exudative empyema (n = 4) the fluid was aspirated, but one patient required intercostal tube (ICT) drainage for 6 days. There were four patients with fibrinopurulent empyema treated with thorascopic drainage with a mean post-operative stay of 8 days (range 4–12 days). In the organizing stage (n = 18), initial drainage with large ICT was performed. The pleura was less than 2 cm in thickness in eight patients, for which repeated installation of streptokinase was performed (three to seven times). Satisfactory results were achieved in six patients (75%) and the remaining two required decortication. Of the ten patients with thick cortex, one required a window and nine had decortication, two of which had additional lobectomy and two had pneumonectomy. All patients fully recovered with no mortality and with a mean duration of drainage of 18 days (range 3–61 days). Conclusion: Its stage and the state of the underlying lung should guide surgical treatment for tuberculous empyema. This protocol aims to achieve cure utilizing the least invasive approach and acceptable hospital stay. © 2000 Elsevier Science B.V. All rights reserved.

Keywords: Empyema; Tuberculosis; Surgery
Definitive treatment

1) Is underlying lung expandable?
2) Is parenchymal resection required?
3) Is the patient high risk for surgery?
Treatment plan for chronic mycobacterial empyema

I. Decortication
   A. Lung expandable
      No extensive circumferential calcifications
      No cavitations or cystic bronchiectasis
   B. Previous resection
      Add thoracoplasty
   C. When is additional resection necessary?
      Multidrug resistance present
      Hemoptysis
      Aspergilloma
      Cystic bronchiectases/infected
      Avoid pneumonectomy whenever possible
   D. When is additional resection not indicated?
      Reactivated tuberculosis, converted sputum, asymptomatic destroyed lung
   E. What to do when poor expansion of lung is present during decortication
      Consider immediate thoracoplasty
      May elect prolonged drainage plus pneumoperitoneum
   F. What to do when there is poor expansion postoperatively
      Consider deferred thoracoplasty
Treatment plan for chronic mycobacterial empyema

II. Open window thoracostomy
   A. Lung not expandable
      Circumferential calcification
   B. Poor-risk patient
   C. Previous resection complicating IIA or IIB
      Consider isolated thoracoplasty for apical space
Chronic Tuberculous Empyema
Pleural calcification
Post-op problem after decortication

- Pleural space problem
- Prolong air leak
Pleural space problem

- Muscle flap
- Plombage
- Thoracoplasty
- Open pleural window
Open pleural window
References

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