Guideline: Pleural Infection Management, Inpatient

Updated: October 25, 2021

Clinical algorithm:

**Suspected Pleural Infection**
- Evaluate for causes of transudative effusion
  - Heart Failure
  - Renal Failure
  - Nephrotic syndrome
  - Cirrhosis

**Exudate**
- Exudate is consistent with complex parapneumonic effusion or empyema: Neutrophilic predominance with any of the following
  - PH < 7.2
  - Glucose < 60
  - Positive gram stain
  - LDH > 1000

**Repeat imaging after Thoracentesis (Chest XR PA/Lateral)**
- Exudate is consistent with simple parapneumonic effusion
  - Neutrophilic predominant AND negative gram stain/cultures

**Persistent or loculated effusion**
- Consultations recommended
  - Interventional Radiology for pleural drain placement
  - Pulmonary for management of pleural lytics.
  - Infectious Disease for antibiotic management
  - thoracentesis studies for undifferential pleural effusions
  - Chemistries: Protein, LDH, Glucose, pH
  - Cell count with differential
  - Cultures: Aerobic, Anaerobic
  - Cytology

**Exudative vs Transudative Effusions**
- Light’s Criteria
  - Usually lymphocytic predominant exudates
  - Pulmonary consult recommended for management of malignant pleural effusions and input regarding further pleural interventions (pleural biopsy, pleurodesis, tunneled pleural catheter)

**Effusion Resolved + Negative cultures**
- Likely simple parapneumonic effusion
  - Refer to CAP algorithm and culture results for antibiotic selection
  - For patients with simple parapneumonic effusion, 7-10 days of antibiotic therapy is reasonable
  - Followup Cytology

**Initiate MIST II Protocol w/ assistance from pulmonary consult team:**
- TPA + Domase BID x 3 days
  - Contraindications to intrapleural lytics:
    - Holding therapeutic anticoagulation is preferred but not an absolute contraindication to MIST II
    - Serious bleeding diathesis
    - Bronchopleural fistulas
    - Esophageal perforations
    - Diaphragmatic perforations

**Repeat imaging after completion of protocol (Chest XR PA/Lateral)**
- Effusion improved or resolved AND patient is clinically improved
  - Determine antibiotic treatment course with assistance from pulmonary and infectious disease
  - Discuss timing of chest tube removal with IR and pulmonary teams

**Persistent effusion**
- Consult to Thoracic surgery for surgical management of pleural infection
Clinical pathway/guideline summary

CLINICAL PATHWAY/GUIDELINE NAME: Pleural Infection Management

PATIENT POPULATION AND DIAGNOSIS: All patients with suspected pleural infection

APPLICABLE TO: Spectrum Health Grand Rapids ONLY (Butterworth & Blodgett)

BRIEF DESCRIPTION: Treatment algorithm for the diagnosis and management of pleural infections including simple parapneumonic effusions, complex parapneumonic effusions, and empyema.

OVERSIGHT TEAM LEADER(S): John Egan, MD

OWNING EXPERT IMPROVEMENT TEAM (EIT): N/A

MANAGING CLINICAL PRACTICE COUNCIL (CPC): Specialty Health

CPC APPROVAL DATE: 10/18/2021

OTHER TEAM(S) IMPACTED: Hospital medicine, interventional radiology, pulmonary consult, infectious disease consult, thoracic surgery

IMPLEMENTATION DATE: October 2021

LAST REVISED: October 25, 2021

FOR MORE INFORMATION, CONTACT: John Egan, MD

Clinical pathways clinical approach

TREATMENT AND MANAGEMENT:

This pathway allows for expeditious diagnosis and treatment of pleural infections requiring hospital admission. Pleural infections represent a continuation of pneumonia and persistent infection and often require drainage. Drainage maybe challenging or incomplete given these infections propensity to cause loculations and pus in the pleural space. Chest tube drainage and antibiotics alone may not obviate the need for thoracic surgery. Since the publishing of MIST II, more and more evidence has shown the benefit of instilling intrapleural lytics to break up loculations and pus and allow for complete drainage of pleural infection. Specifically, tissue plasminogen activator (tPA) and dornase alpha, when given in combination, can improve pleural infection drainage and allow patients to avoid surgery.
REFERENCES:
