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Pleural Empyema

Standard Operating Procedure (SOP)



Union of Myanmar Special region - 1
Pediatric (SOP)

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Union of Myanmar Special region - 1
Pediatric (SOP)

Pleural Empyema

Clinical Presentation

Clinical diagnosis of empyema should be considered in following conditions

- *Pneumonia not responds to initial therapy*
- *Unwell with fever without clear focus*
- *Chest pain/abdominal pain*
- *Respiratory distress, hypoxia, signs of pleural effusion*
- *May be septic, dehydrated, hyponatremic and in respiratory failure*

Investigations

Diagnostic imaging

- *CXR (AP or PA)*
- *No role for lateral CXR*
- *USG chest is the investigation of choice (Radiologist's comments should include depth, position and presence of loculations)*
- *Routine CT scan chest is not recommended*

Diagnostic microbiology

- *Blood culture in all cases*
- *Diagnostic analysis of pleural fluid (Gram stain and culture)*
- *Dignostic thoracocentesis is not recommended*
- *Biochemical analysis is not needed for uncomplicated parapneumonic effusion/empyema*

Table 4.6 Baseline initial blood tests

<i>Blood Tests</i>	<i>Recommended</i>	<i>When to Repeat</i>
<i>White cells CRP</i>	<i>Baseline</i>	<i>If unresponsive to treatment or developing complications</i>
<i>Hb</i>	<i>Baseline</i>	<i>If concerns that HUS is developing</i>
<i>Platelet</i>	<i>Baseline</i>	<i>If concerns that HUS is developing</i>
<i>U&Es</i>	<i>Baseline</i>	<i>If concerns that HUS or SIADH is developing</i>

Management

- *Under the care of pediatrician and pediatric surgeon*
- *Management includes antibiotics, pleural drain, supportive management, management of treatment failure and complications, discharge and follow-up*

Antibiotics

Empirical antibiotics should cover at least Streptococcus pneumoniae and Staphylococcus aureus:

- *IV antibiotics of high dose should be given in initial stage.*
- *IV Benzylpenicillin (50 mg/kg body weight (maximum 2-4 gram) every 6 hours and IV Flucloxacillin (50 mg/kg body weight (maximum 1 gram) every 6 hours*
- *IV Clindamycin (6.25-10 mg/kg body weight (maximum 1.2 gram) 4 times/day) alone can be used in patients with penicillin allergy.*
- *Broader spectrum agents to cover aerobic gram negative bacilli are indicated in case of hospital acquired pneumonia, following surgery/trauma/aspiration.*
- *Anaerobic infection should be considered in children with risk of aspiration.*
- *Further antibiotic management should be according to antibiotic sensitivities in pleural fluid culture positive cases. Initial IV empirical antibiotic treatment should be continued in culture negative cases.*
- *Switch to oral antibiotics when following criteria are met:*
 - *Any drain removed*
 - *Afebrile for 248 hours*
 - *Good clinical progress (looking well, not requiring supplemental oxygen, mild work of breathing)*
 - *Choice of antibiotics depends on causal organism, If causal organism is not identified, Amoxycillin-clavulanic acid 25 mg/kg/dose (max 875 mg) 3 times/ day is recommended.*
 - *Duration of oral antibiotic therapy is 1-4 weeks depending on factors including the severity of disease, causative organism and complication.*
- *Anti-tuberculosis treatment should not be started empirically unless there is very strong circumstantial evidence.*

Pleural drain

- *Indications for intervention*
 - *Increasing pleural effusion and/or pleural effusion compromising respiratory function*
 - *Persistent fever after 48 hours of IV antibiotics*
- *A drain should be inserted in case with significant pleural effusion. Repeated taps are not recommended (Refer, Page-527 Chest drain placement).*
- *Intervention options*
 - *Chest drain alone (wide bore)*

- *Chest drain (percutaneous, small bore) and fibrinolytic agent (intrapleural Alteplase) if available*

Supportive management

- *Oxygen to maintain SpO₂ >93%*
- *Antipyretics (Paracetamol) should be given.*
- *Adequate analgesia to allow pain free respiration and mobilization for those with a chest drain and/or pleural pain.*
- *Fluid and nutritional management (consider dehydration, SIADH)*
- *Early mobilization should be encouraged but there is no specific role for chest physiotherapy.*

Treatment failure and complications

- *Indicated by persistent fever*
- *CT scan chest when persistent fever associated with rise in white count and CRP*

Criteria for Discharge

- *Minimal respiratory distress*
- *SpO₂ consistently >93% in air*
- *Last drain removed for >12 hours*

Follow up

- *Follow up should be continued until time of complete recovery and CXR has returned to normal.*
- *Repeat CXR at 4-6 weeks after discharge to ensure resolution*

Management of Children with Pleural Empyema

Pneumonia with fever after 48 hours of appropriate therapy and or clinical deterioration

