Complicated Parapneumonic Effusion and Pleural Empyema in Adults - Microbiology Summary Clinical Guideline

Reference number:CG-ANTI/2016/010

Clinical concerns re complicated parapneumonic effusion/pleural empyema

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Investigation:

- Radiology:
  - Initially, CXR
  - If there is radiological evidence of pleural effusion, consider US ± CT in collaboration with the respiratory team
- Microbiology:
  - ± Sputum culture (e.g. if purulent cough)
  - ± Blood cultures (e.g. if episode[s] of fever; if the differential diagnosis includes bloodstream infection, sepsis, or septic shock; if for initiation of treatment with intravenous antibiotics)
- Blood sciences:
  - FBC, CRP, lactate, U&Es, LFTs, and clotting

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Consultation with the respiratory registrar/consultant on call

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Investigation and treatment

- Image-guided (ultrasound) diagnostic/therapeutic pleural aspiration (or chest drain insertion/drainage), with pleural fluid for:
  - Biochemistry: glucose, lactate dehydrogenase, and pH
  - Microbiology: microscopy (WBC count, Gram stain, ± mycobacterial stain) and culture (bacterial, ± mycobacterial, fungal)
- If clinically unstable or symptom onset is acute (day[s]) in nature:
  - Start empiric intravenous antibiotics before the pleural aspiration (or chest drain insertion/drainage)
- If clinically stable and symptom onset is subacute (weeks) in nature:
  - Start empiric intravenous antibiotics after the pleural aspiration (or chest drain insertion/drainage)

NB Please note page 2 regarding empiric intravenous antibiotic regimens

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Treatment; medical, radiological, or surgical intervention

- In collaboration with the respiratory ± thoracic team(s):
  - ± Image-guided (ultrasound) chest drain insertion/drainage
  - ± Intrapleural tissue plasminogen activator with deoxyribonuclease
  - ± Video-assisted thoracic surgery with debridement or decortication

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Treatment; antibiotics

- Directed with culture and susceptibilities

Management (2 of 2)

Empiric intravenous antibiotics: community acquired (including CAP associated with aspiration)

First line	Metronidazole 500 mg 8 hourly **and** Amoxicillin 1 g 8 hourly
Second line, if non-immediate without systemic involvement penicillin allergy	Metronidazole 500 mg 8 hourly **and** Cefuroxime 1.5 g 8 hourly
Third line, if immediate rapidly evolving or non-immediate with systemic involvement penicillin allergy	Metronidazole 500 mg 8 hourly **and** Co-trimoxazole 960 mg 12 hourly
Fourth line, if immediate rapidly evolving or non-immediate with systemic involvement penicillin allergy and if co-trimoxazole is contraindicated	Metronidazole 500 mg 8 hourly **and** Levofloxacin 500 mg 12 hourly
Fifth line, if penicillin allergy and if metronidazole is contraindicated	Clindamycin 600 mg 8 hourly

Empiric intravenous antibiotics: hospital acquired (including HAP associated with aspiration)

First line	Piperacillin tazobactam 4.5 g 6 hourly **±** If there are clinical concerns regarding the risk of MRSA, glycopeptide (vancomycin or teicoplanin), dose as per hospital guidelines, vancomycin target pre dose level 15-20 mg/l, teicoplanin target pre dose level 15-30 mg/l
Second line, if non-immediate without systemic involvement penicillin allergy	Metronidazole 500 mg 8 hourly **and** Glycopeptide (vancomycin or teicoplanin), dose as per hospital guidelines, vancomycin target pre dose level 15-20 mg/l, teicoplanin target pre dose level 15-30 mg/l; **and** Ceftazidime 2 g 8 hourly
Third line, if immediate rapidly evolving or non-immediate with systemic involvement penicillin allergy	Metronidazole 500 mg 8 hourly; **and** Ciprofloxacin 400 mg 8 hourly; **and** Glycopeptide (vancomycin or teicoplanin), dose as per hospital guidelines, vancomycin target pre dose level 15-20 mg/l, teicoplanin target pre dose level 15-30 mg/l
Fourth line, if immediate rapidly evolving or non-immediate with systemic involvement penicillin allergy and if ciprofloxacin is contraindicated	Metronidazole 500 mg 8 hourly; **and** Glycopeptide (vancomycin or teicoplanin), dose as per hospital guidelines, vancomycin target pre dose level 15-20 mg/l, teicoplanin target pre dose level 15-30 mg/l; **and** Aztreonam 2 g 6 hourly
Fifth line, if penicillin allergy and if metronidazole is contraindicated	Clindamycin 600 mg 8 hourly; **and** Aztreonam 2 g 6 hourly

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Document control

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