Beyond a prodrome of sore throat, an uncommon cause for multiple septic emboli

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Key learning objective:

1. Consider oropharyngeal infection complications as a potential cause of septic emboli when managing patients with multiple pulmonary complications.
2. Lemierre syndrome is more often caused by organisms other than *Fusobacterium* species than previously thought

Evidence of Conflict of Financial Interest:

	Co-authors	Conflict disclosures
1	Brian Yu Chieh Cheng	None
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3	Conor Bell	None
4	Eldar Priel	None

Intro & Case presentation

- A 43-year-old female with no past medical history presents to the ED with a 5-day history of sore throat, productive cough, fevers and chest pain.
- In the ED, she was critically ill with evidence of septic shock and an incidental right sided internal jugular filling defect was identified during ultrasound guided central line insertion.

Lab Test	Result	Interpretation / Notes
Leukocytes	24 × 10^9/L	Leukocytosis
Neutrophils	92%	Neutrophilia
C-reactive protein (CRP)	419.1 mg/L	Elevated
D-dimer	76,559 µg/L	Elevated
High-sensitivity Troponin	16 ng/L	Peak measurement
Urea	14.5 mmol/L	Elevated
Creatinine	252 µmol/L	Acute kidney injury
Microbiology	**Group A Streptococci infection – *S. pyogenes***	Confirmed on multiple blood cultures & pleural fluid PCR

- Subsequent blood culture revealed *S. pyogenes* infection and a diagnosis of **Lemierre syndrome** was formulated.
- See Table on the right for a summary of initial blood work

- Lemierre syndrome is a rare but life-threatening complication of oropharyngeal infections with reported annual incidence of 3.6 cases per million population-years and a mortality rate up to 9% even with treatment.[1]
- Lemierre syndrome is classically associated with *Fusobacterium* infections and recent evidence suggest gram-positive organisms such as *Streptococcus* or *Staphylococcus* species may account for 21% of cases.[2]

Key Imaging findings

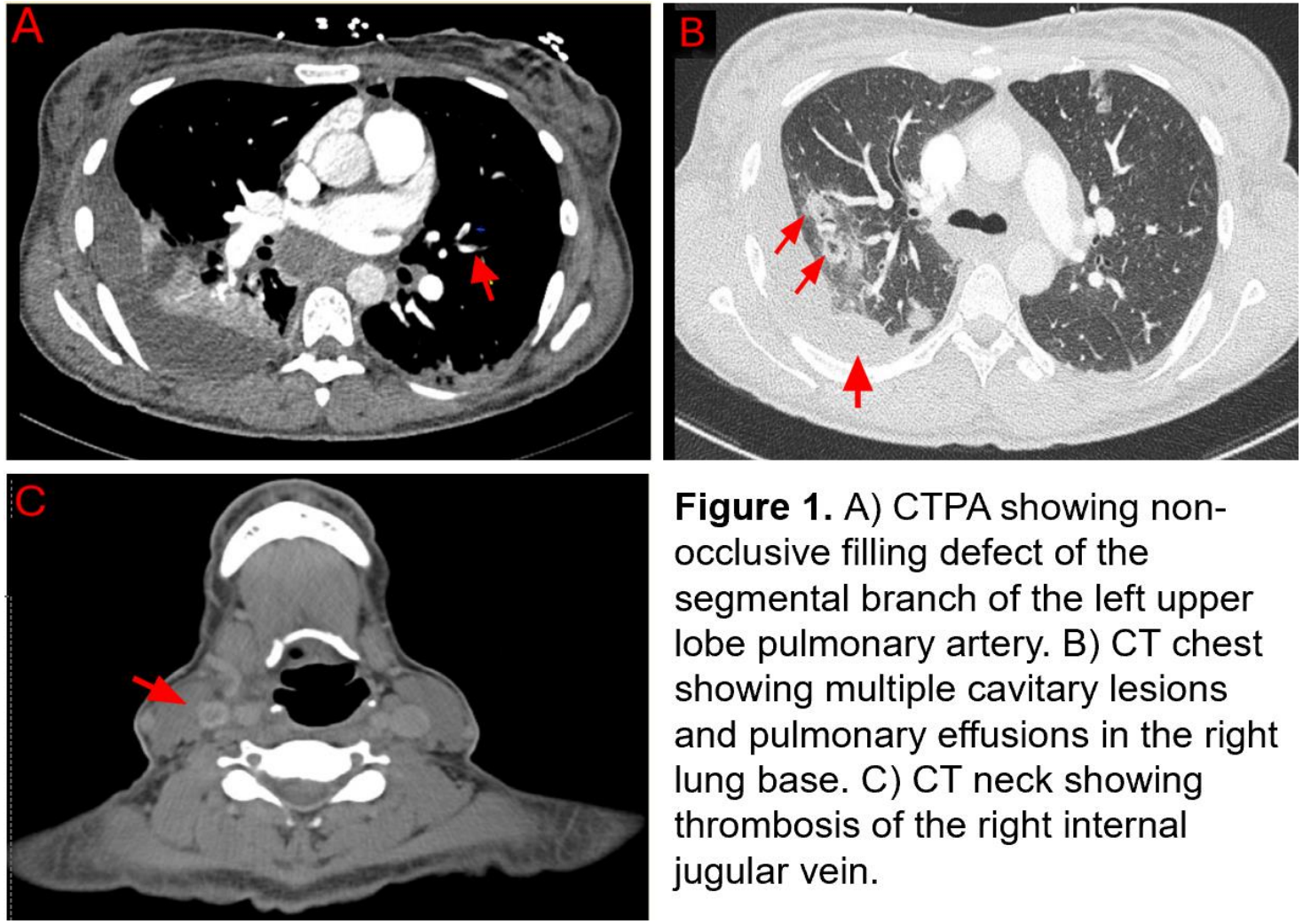


Figure 1. A) CTPA showing non-occlusive filling defect of the segmental branch of the left upper lobe pulmonary artery. B) CT chest showing multiple cavitary lesions and pulmonary effusions in the right lung base. C) CT neck showing thrombosis of the right internal jugular vein.

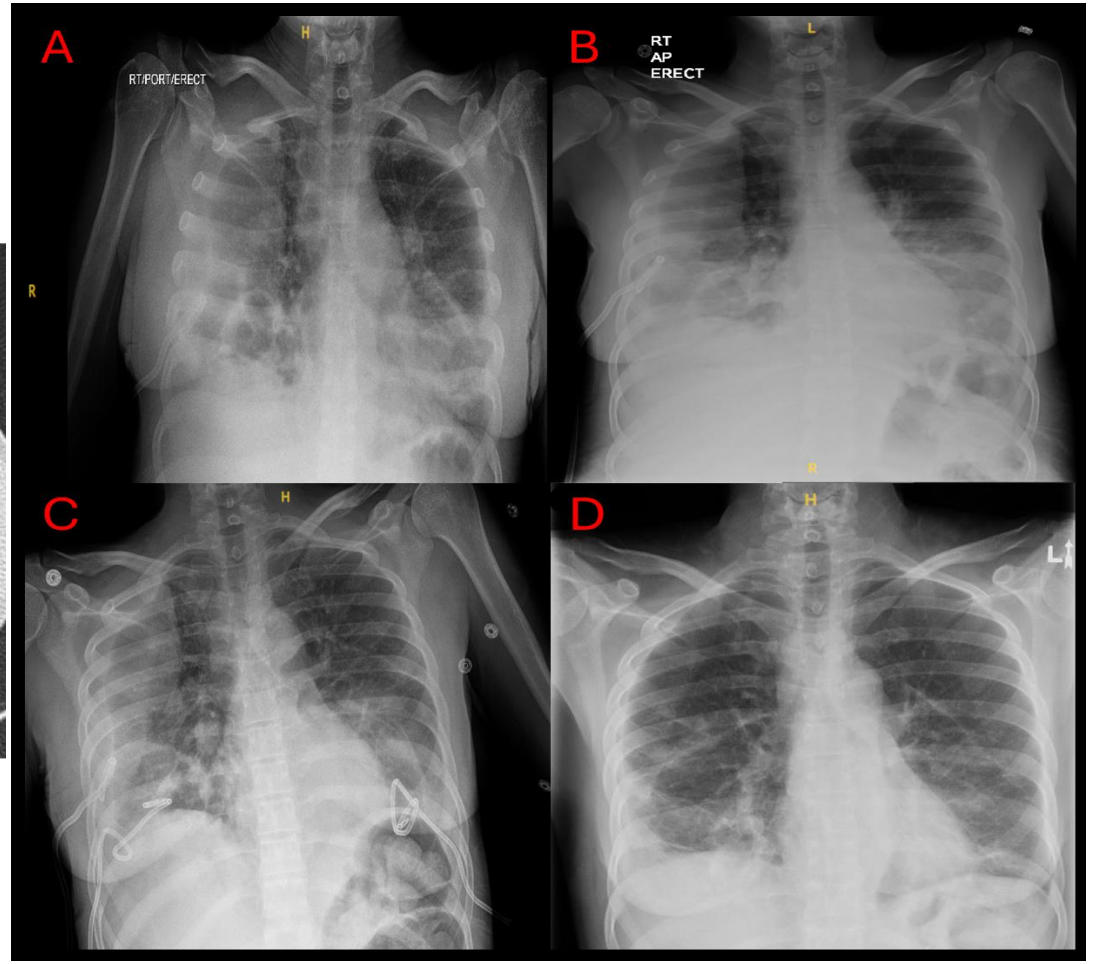


Figure 2. Serial chest radiographs: A) Day 5 of admission, before chest tube insertion. B) Day 8 of admission after right sided chest tube insertion. C) Day 11 of admission after left sided chest tube insertion. D) Day 24 of admission before discharge, with both chest tubes removed and after intrapleural lytic therapy.

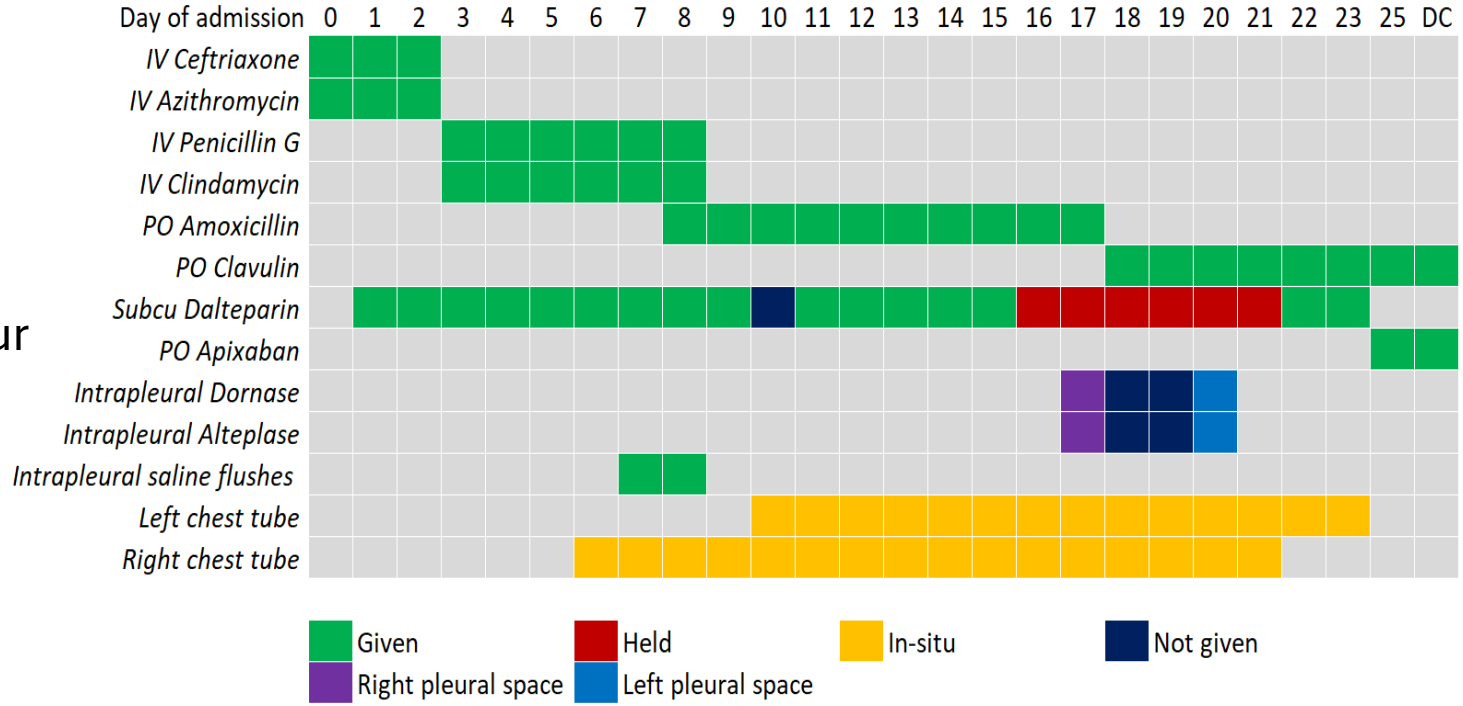
Treatment & Outcome

- Treatment involved antibiotics (tailored for invasive Group A Streptococci infection) and full dose anticoagulation (see Figure on the right for treatment timeline)

- Therapeutic anticoagulation was started in our patient due to the high clot burden (thrombophlebitis plus coexisting pulmonary emboli) and reasonable bleeding risk.

- Conservative treatment of bilateral empyema was attempted with chest tubes suction and intrapleural saline flushes.

- A modified MIST-2 protocol with only one day of intrapleural lytic therapy was chosen to accommodate patient bleeding risk and pain. [3] Dornase and Alteplase were both injected into the pleural space with good effect.



- The patient was able to make a full recovery with complete resolution of her bilateral empyema and multifocal pneumonia on chest imaging.

References

1. https://doi.org/10.1007/s10096-008-0496-4
2. https://doi.org/10.1007/s15010-025-02489-w
3. https://doi.org/10.1016/s2213-2600(20)30533-6