



Empyema as a Rare Manifestation of Extraintestinal *Clostridium difficile*

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BACKGROUND

- *Clostridium difficile* is a gram-positive, endospore forming, anaerobic bacteria that accounts for up to 25% of infectious diarrheal illnesses.
- Patients are at higher risk for developing *C. difficile* infection (CDI) if they were recently exposed to antibiotics, immunocompromised, reside in a healthcare setting, or have undergone abdominal surgery.
- Extra-intestinal CDI is exceedingly rare and includes abdominopelvic infections, bloodstream infections, wound infections, and pulmonary infections.
- There are less than 10 published cases of *C. difficile* empyema, with the majority thought to be transmitted via aspiration.
- Herein we report a case of a 69-year-old male with *C. difficile* positive parapneumonic effusion, highlighting the importance of recognizing extra-intestinal manifestations of this common nosocomial pathogen.

CASE DESCRIPTION

- 69-year-old man with history of chronic hypoxia (on 2L) and end-stage renal disease presented with difficulty breathing.
- On review of systems, he endorsed diarrhea and dysphagia to solids
- Chest CT revealed a loculated large left pleural effusion with near complete collapse of the left lung (Figure 2).
- Pleural fluid was drained and appeared brown. Culture of fluid grew *C. difficile* at which time he was started on intravenous metronidazole.
- *C. difficile* stool testing was negative. CT abdomen did not show evidence of fistulous connection between the pleural space and GI tract.
- His dysphagia raised concerns for aspiration prompting evaluation with EGD which was normal.
- He was given intrapleural fibrinolytic therapy and had a chest tube placed. The chest tube output improved within 72 hours and pleural fluid was reanalyzed and showed marked improvement and no microorganism was detected on culture.
- The patient was transitioned to oral 500mg metronidazole every 8 hours for a total of 4 weeks and discharged.

Figure 1. Timeline and events of hospital course.

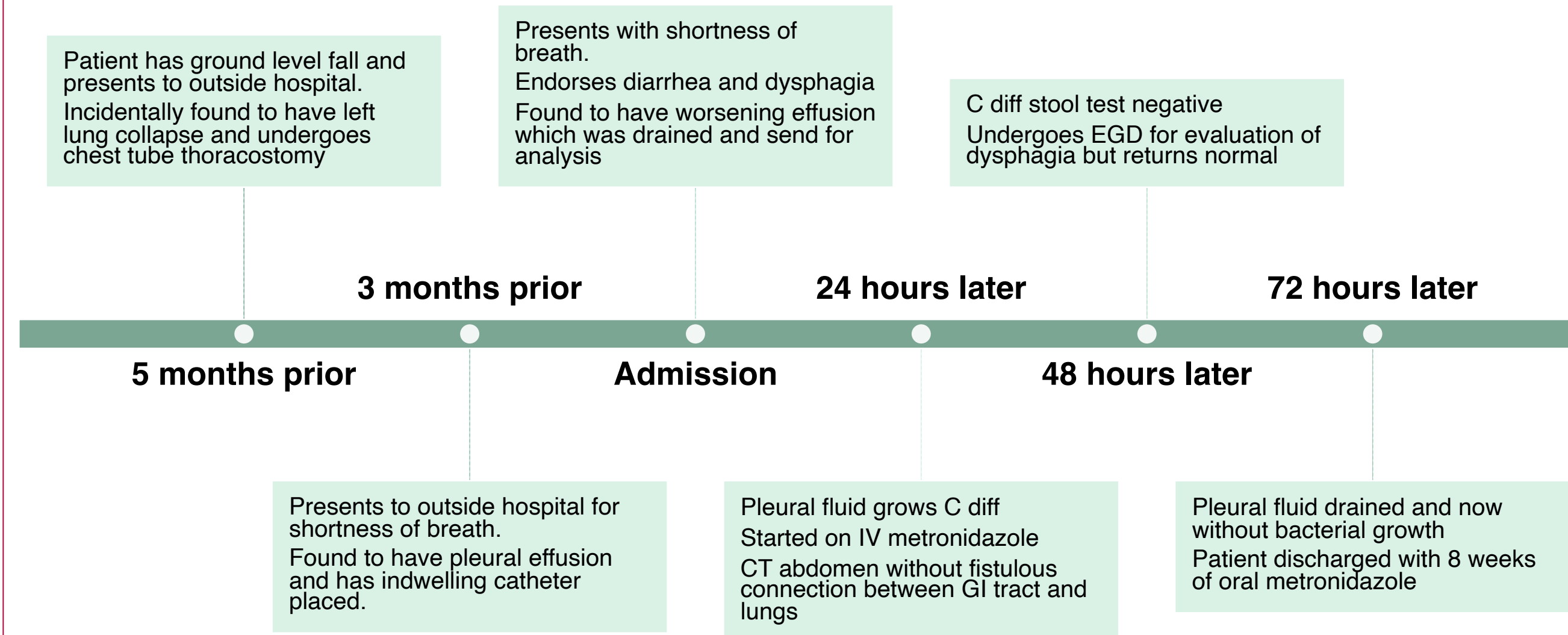
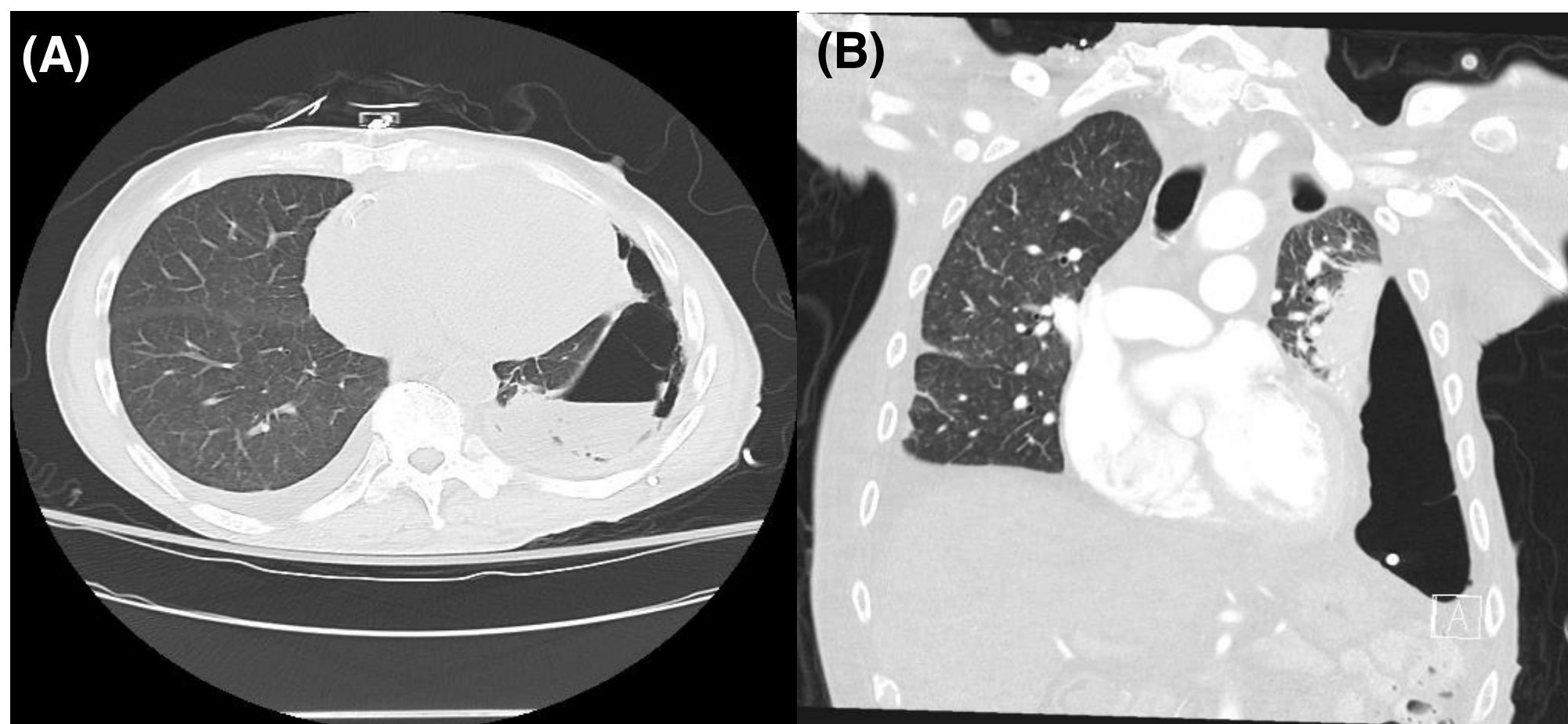


Figure 2. (A) Transverse and (B) coronal CT of the chest demonstrating loculated left sided pleural effusion with indwelling intrapleural catheter and near complete collapse of left lung.



CONCLUSIONS

- *C. difficile* empyema is exceedingly rare, and most cases have been attributed to aspiration. Other possible mechanisms include introduction of the bacteria into the pleural space following invasive procedures (chest tube placement, thoracostomy, thoracentesis), entero-pleural fistula, or hematogenous spread.
- Given the reported history of dysphagia to solids and absence of entero-pleural fistula and negative blood cultures, we believe the empyema was transmitted via aspiration, which is consistent with other case reports in the literature.
- Due to the paucity of cases of *C. difficile* empyema, there is no published guideline directed therapy. The source of infection requires drainage with chest tube thoracostomy like other causes of bacterial empyema. *C. difficile* empyema has been shown to be effectively treated with intravenous metronidazole with or without cefepime.

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