Stop that Bloody Cough: A Case of Hemoptysis After Administration of Intrapleural tPA Administration

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Abstract

Congestive heart failure is a morbid condition with a myriad of pathologic sequelae. Recurrent accumulations of fluid in the pleural space serve as a nidus for infection. The combination of CHF-induced pleural effusions and concomitant pneumonia are a recipe for disaster as bacteria can translocate to form parapneumonic effusions with empyemas as potential complications. Empyemas are one of many etiologies of exudative pleural effusions and are treated with complete drainage of the infected pleural fluid; however, loculations create a barrier for thoracostomy drainage. Since the MIST2 trial in 2011, intrapleural alteplase and dornase alfa have been utilized as fibrinolytic therapy to break up loculations for aid in drainage of loculated parapneumonic effusions. Here we present a case of immediate hemoptysis after intrapleural fibrinolytic therapy.

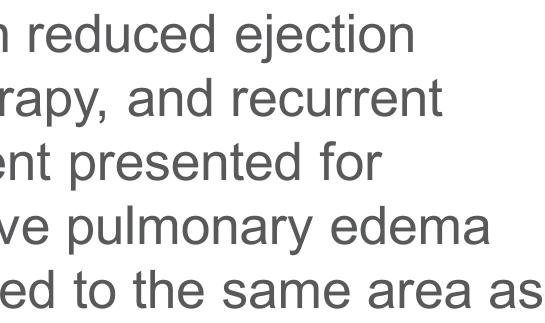
Case Presentation

A 56-year-old female with history of CHF with reduced ejection fraction (45%), COPD on chronic oxygen therapy, and recurrent pleural effusions s/p Pleurx catheter placement presented for evaluation of dyspnea. She was found to have pulmonary edema and a left-sided pleural effusion which localized to the same area as her prior pleural effusions.

She was initiated on IV diuresis without resolution of her effusion and drainage via Pleurx catheter was unable to be performed due to lack of supplies. A bedside thoracentesis was attempted but ultimately had to be aborted as she could not tolerate the procedure. A CTguided chest tube was placed by interventional radiology. A CT of the chest was performed showing adequate placement of the chest tube in the pleural space with a loculated effusion.

Intrapleural fibrinolytic therapy with tissue plasminogen activator and dornase was administered for 2 doses but after the second administration she developed hemoptysis of 50 to 75 cc of bright red blood within 5 minutes of being instilled. Due to this, a bronchopleural fistula was suspected and no further attempts at intrapleural fibrinolytic therapy were made.

Case Presentation



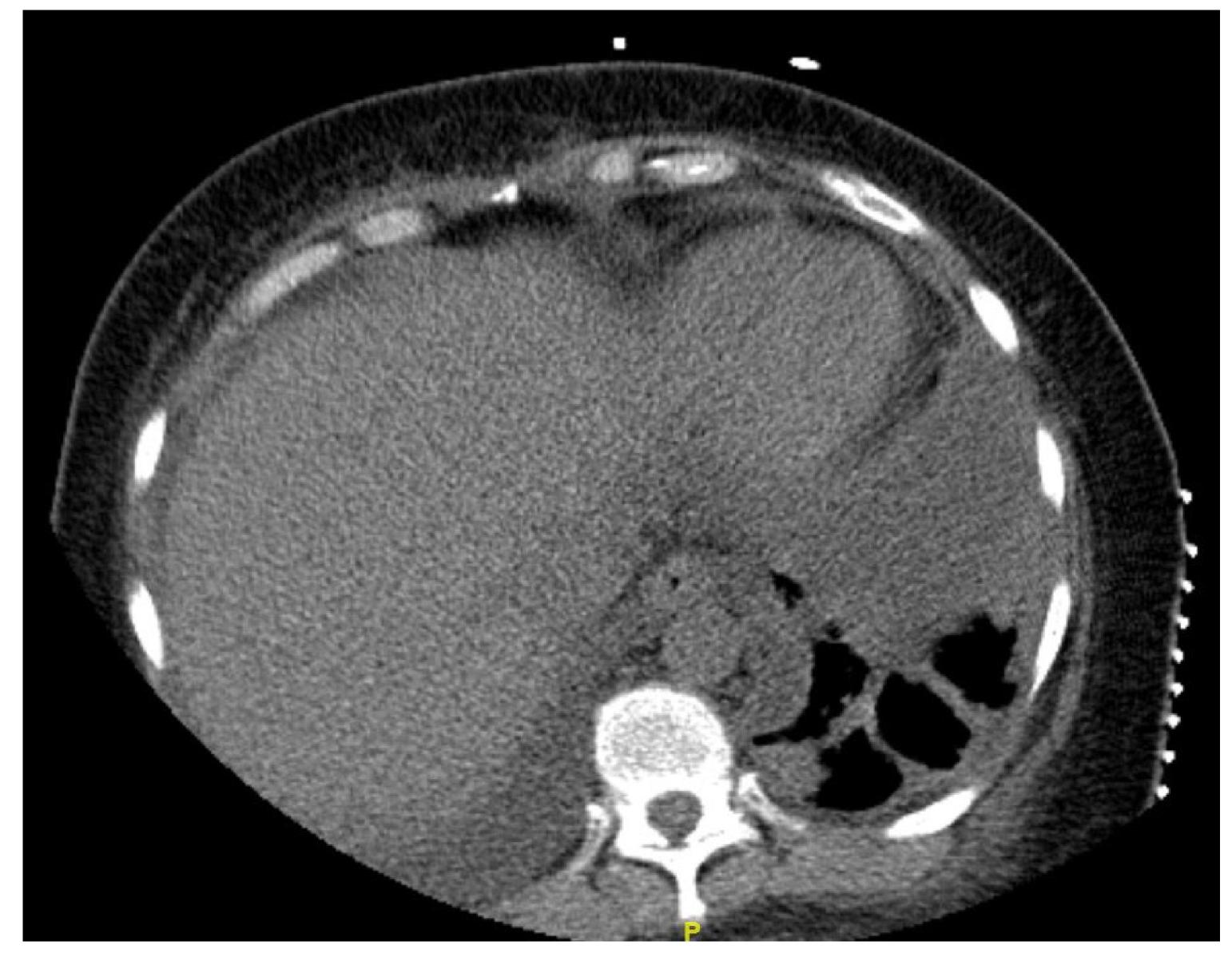


Figure 1: CT Chest prior to insertion of Chest Tube





Figure 2: CT Chest 3 days after chest tube insertion

She was transferred back to our facility with right-sided chest tube in place after no further cardiothoracic surgical interventions were necessary. Her postoperative course was complicated by ICU delirium and unintentional removal of her right-sided chest tube. Her respiratory status remained stable on her baseline 3 L of continuous oxygen and she was successfully discharged.

Hemoptysis and intrapleural hemorrhage are 2 serious adverse events that are associated with intrapleural fibrinolytic therapy. Intrapleural hemorrhage is a more common adverse event than hemoptysis with an occurrence rate of 4.2% in the MIST2 trial. A proposed solution to this adverse event is decreasing the instilled alteplase dose which has been trialed in the ADAPT and ADAPT-2 trials utilizing an alteplase dose of 5 mg and 2.5 mg respectively. The ADAPT and ADAPT-2 trials showed a 93.4% and 88.4% success rate with a pleural bleeding event rate of 4.9% and 2.9% respectively. Intrapleural fibrinolytic therapy is an important therapeutic modality to prevent thoracic surgery and may be the only option in patients who are not surgical candidates. Current studies are underway for optimal medical therapy including identification of other tissue plasminogen activators and optimal dosing of intrapleural fibrinolytics are important future studies to investigate.

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Case Presentation

She was transferred to a tertiary care center for cardiothoracic surgery consultation. She underwent left-sided posterolateral thoracotomy with decortication and insertion of right-sided chest tube. Ultimately no bronchopleural fistula was found on CT chest. Her pleural rind was sent for pathology which showed fibrosis with acute and chronic inflammation and granulation tissue consistent with a diagnosis of empyema.

Discussion

References

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