COUGH RESPONSE TO INTRAPLEURAL FIBRINOLYTICS PREDICTING BRONCHOPLEURAL FISTULA

TONY KAMEL CHARLES ABREU AND HEMANT SHAH

INTRODUCTION: A 79-year-old female status post right lower lobe (RLL) resection one month prior presented with shortness of breath, cough, and fever despite antibiotic therapy. Initial chest CT revealed empyema. Curiously, each administration of intrapleural fibrinolytic therapy with tissue plasminogen activator (tPA) and recombinant deoxyribonuclease (DNase) elicited a significant cough response which raised concern for bronchopleural fistula (BPF) despite initial negative bronchoscopy. Repeat bronchoscopy with methylene blue administration confirmed BPF.

CASE PRESENTATION: A 79-year-old female with history of Stage 1B adenocarcinoma of the RLL one month post lobectomy presented to the hospital after being seen by outpatient oncology for fevers, dyspnea, and hypoxia of two weeks duration. When seen by oncology she was given levofloxacin for suspected pneumonia, but her fevers persisted. She then presented to the ER where she underwent CT of the chest which showed empyema of the right lower lung field. Initial bronchoscopy showed an intact surgical stump without signs of BPF. Intrapleural thrombolytic therapy with tPA and DNase was initiated, and notably, each administration elicited a significant cough response which was concerning for BPF. Repeat bronchoscopy with intrapleural methylene blue was performed, given in 10 mL increments, and after 40 mL, a blue gush was visualized, confirming BPF. The patient was taken to the OR for thoracotomy with decortication. She was discharged on antibiotics with total symptomatic resolution.

DISCUSSION: BPF refers to a communication between the pleural space and bronchial tree, which can be a complication after pulmonary resection.1,2 Patients with BPF are prone to developing empyema with over 75% of post-pneumonectomy empyemas occurring in the setting of BPF.2 Algar et al found a mortality rate of 30.8% in those with BPF after pneumonectomy for NSCLC.5 Given the significant morbidity and mortality related to BPF, early diagnosis and treatment are imperative. Patients should be evaluated by CT of the chest and bronchoscopy for diagnosis. Intra-bronchial instillation of saline can be performed to monitor for bubbles at the site of bronchial stump closure. Classically, if this test were non-diagnostic, patients undergo stump leak test, necessitating thoracoscopy and positive pressure ventilation.6 Recently, localization has been achieved by retrograde instillation of methylene blue into a pleural drain which is then visualized by bronchoscopy.7,8

CONCLUSIONS: In our patient, initial bronchoscopy was nondiagnostic for BPF but suspicion remained high due to her repeated cough response to fibrinolytics. We believe her cough response was directly related to the presence of a BPF, and although the sensitivity and specificity of such an exam sign are likely low, it may be a simple, inexpensive and useful hint that raises suspicion for BPF in the correct clinical context.


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