

## Introduction

Acute eosinophilic pneumonia (AEP) is a rare, acute respiratory illness that can present as acute respiratory distress syndrome (ARDS) leading to death. It may be caused by tobacco smoke, inhaled substances, or drugs, however, most often, the condition is idiopathic.

## Case Presentation

70-year-old male smoker with a past medical history of paroxysmal atrial fibrillation on anticoagulation, coronary artery disease, hypertension presented to the hospital with worsening shortness of breath for the last 4 days. He was noted to be hypoxic with  $\text{spO}_2$  of 80% on room air and was placed on BiPAP. Chest x-ray was significant for bilateral infiltrates. Laboratory studies: BNP of 1004 (Normal: 0-100) pg/ml, white blood cell count of 11.2 (Normal: 4.8-10.8)  $10^3/\mu\text{L}$ , eosinophil count of 1.06 (Normal: 0.04-0.54)  $10^3/\mu\text{L}$ , and CRP of 17.53 ( $<1.00$ ) mg/dl. COVID, RSV, and influenza testing were negative. He denied history of recent travel or immunosuppression. CT scan of the chest revealed multiple bilateral opacities raising concern for ARDS. The patient was transferred to the intensive care unit, intubated and underwent bronchoscopy and diagnostic broncho-alveolar lavage (BAL). Differential diagnoses included eosinophilic pneumonia, parasitic infection, and acute interstitial pneumonia. He was empirically treated with solumedrol and broad-spectrum antibiotics. He was also treated with albendazole for concern of *Strongyloides* infection due to peripheral eosinophilia that eventually increased to 6.88  $10^3/\mu\text{L}$ . The fluid showed 57% (Normal: 0-5%) eosinophils without parasites or malignant cells leading to the diagnosis of eosinophilic pneumonia. Vasculitis workup including p-ANCA, c-ANCA and anti-GBM was negative. Fungal cultures, Histoplasma antigen, and Coccidioides antibody were negative. Eventually, the patient was extubated to BiPAP but was unable to maintain oxygenation. Unfortunately, he passed away.

## Discussion

AEP is a challenging diagnosis as it can mimic other diseases that cause acute respiratory failure. It can be diagnosed by BAL which shows evidence of pulmonary eosinophilia. It is important to rule out parasitic etiologies as they may greatly alter the course of treatment. The cessation of exposure to the inciting agent, and glucocorticoids represents the mainstay of treating AEP of non-infectious origin. When treated promptly, rapid reversal of respiratory failure and complete recovery is possible.